

# The Mining Journal

## RAILWAY AND COMMERCIAL GAZETTE.

FORMING A COMPLETE RECORD OF THE PROCEEDINGS OF ALL PUBLIC COMPANIES.

No. 770.—Vol. XX.]

LONDON, SATURDAY, MAY 25, 1850.

[PRICE 6D.]

**MINE AND MATERIALS FOR SALE.—TO BE SOLD,**  
BY PUBLIC AUCTION, on Tuesday, the 29th inst., at Twelve o'clock in the forenoon, unless previously disposed of by private contract (of which due notice will be given), all that valuable MINE OF BOSCONDE, near ST. AUUSTELL, CORNWALL; and also NINETEEN (19) PARTS OF THE WHEEL TRISTRAM SETT, adjoining to the Bosconde aforesaid on the north and east.

The Bosconde Mine is now in full operation, as a part of the Charlestown United Mines, and yields regular monthly returns of tin, with occasional bunches of rich grey copper ore.—The sets of both mines are held under leases from Colonel Carlyn.

The MATERIALS on the BOSCONDE MINE consist of a STEAM-ENGINE, of 32 inches cylinder, 9 feet stroke in the cylinder, and 7 feet in the boiler, with two boilers, of about 10 tons each; an excellent WATER-WHEEL, of 40 feet diameter, 4 feet stroke in the cylinder, with boiler, gear, &c., complete; 1 water-wheel, 28-feet diameter and 7-feet breast, with cast-iron axle, cranks, &c., complete; and ditto, 104-feet by 4-feet breast.

And on the following day, Wednesday, the 29th inst., at Twelve o'clock in the forenoon the undermentioned SPARE MATERIALS, the property of the CHARLESTOWN MINES, and situated on the Bosconde Common, or Buckler's Mine, will be OFFERED FOR SALE, BY PUBLIC AUCTION—viz.:

STEAM-ENGINES, &c.—1 steam pumping engine, 50-inch cylinder (single), 9-feet stroke in the cylinder, and 8-feet in the shaft, with about 10 tons of boiler; 1 steam-engine (drawing machine), 26-inch cylinder, 8-feet stroke in the cylinder, with 7 tons of boiler, gear, &c., complete; 1 other ditto, 22-inch cylinder, 4-feet stroke in the cylinder, with boiler, gear, &c., complete; 1 water-wheel, 28-feet diameter and 7-feet breast, with cast-iron axle, cranks, &c., complete; and ditto, 104-feet by 4-feet breast.

PITWORK.—9 9-feet 12-inch, 15 9-feet 11-inch pumps; 1 2-feet 6-inch by 12-inch, 1 4-feet 6-inch by 10-inch, and 1 6-feet by 9-inch doorpieces; 3 10-feet 10-inch, 1 9-feet 10-inch, 1 9-feet 8-inch, and 1 9-feet 7-inch working-pieces; 1 6-feet 14-inch, 1 4-feet 11-inch, and 1 4-feet 11-inch windbores; 1 10-inch and 1 9-inch stuffing box and gland; 1 10-feet 11-inch, 1 9-feet 11-inch, 1 9-feet 10-inch, and 1 8-feet 7-inch plunger-pole, with sundry matching-pieces, &c., various lengths and sizes.

3 Cast-iron stamps axles, to carry 6-heads each; 4 wood ditto, to carry 12-heads each, with tappets and sundry stamps frames.

3 Boiler stands, a quantity of flat-rope and other pulleys, &c.  
Wood and other rolls, 4 capstan pulleys, sundry gudgeons and sockets for V-bobs, plummer and top-blocks, bob-gudgeons and nose-plates, crown wheel, 6-ft. diameter. A quantity of tram-iron, and saddles of various sizes, tram-wagons, iron kibbles, chain, &c., a boring machine, together with a large quantity of wrought-iron work, consisting of rod-pieces, staples, and glands, and other useful articles for mining purposes.

For viewing the mines and materials, application to be made to Capt. Barratt, at the Charlestown Mines; and further particulars to Messrs. John Taylor and Son, 6, Queen-street-place, London; Mr. J. Matthews, Tavistock; or to Capt. Barratt, St. Austell.

**EXTENSIVE AND UNRESERVED SALE OF MACHINERY AND RAILWAY PLANT, AT BERWICK-ON-TWEED.**

**MR. EMBLETON will SELL, BY PUBLIC AUCTION,**  
without reserve, on Monday, the 3d day of June next, and the following days (sale to commence each day at Eleven a.m., and finish at six p.m.), in the Yard adjoining the New Bridge, the whole STOCK of

**MACHINERY AND RAILWAY PLANT,**  
which has been used in the erection of the Tweed Viaduct and adjoining contracts, consisting of—4 LOCOMOTIVE ENGINES, with tenders.

2 50-horse power HIGH-PRESSURE BEAM ENGINES.  
1 6-horse power ditto PORTABLE ENGINE.  
1 12-horse power ditto ditto PORTABLE ENGINE.  
1 3-horse power ditto ditto PORTABLE ENGINE.

Also, 1 of Nasmyth's PATENT PILE-DRIVING MACHINES, all of which are in excellent working order, and in many cases as good as new.  
There will also be sold 2 sets of QUADRANT PUMPS, and 1 set of powerful CHAIN PUMPS, capable of lifting 30 feet.

1 Brass FORCING PUMP; a large number of travelling cranes, jib cranes, crane chains, winches, setting poles, &c.

1 Ram frames, with hammers for driving piles.  
A large number of timber bogies, stone waggon, carts, hand and wheelbarrows.

Blacksmiths', carpenters', and quarrying implements of all descriptions.  
There will also be sold a large quantity of HORSE GEAR, and about 300 tons of RAILWAY BARS, 35 and 45 lbs. per yard.

Catalogues, with description of engines, may be seen at Mr. Carstairs' office, Berwick; or in the yard, on the day of sale.—Berwick, May 14, 1850.

**MR. MARSH'S PERIODICAL SALES (established in 1843)**  
OF ABSOLUTE AND CONTINGENT REVERSIONS TO MONEY IN THE FUNDS, and all descriptions of Reversionary Interests, Advowsons, Next Presentations, Rent Charges in lieu of Tithes, and Ecclesiastical Property, Life Interests, Policies of Assurance, Shares, Debentures, Post Office Bonds, &c., will take place on the first Thursday in each month throughout the year 1850, as under:—

Thursday, June 6	Thursday, October 3
Thursday, July 4	Thursday, November 7
Thursday, August 1	Thursday, December 5
Thursday, September 5	

Notices of sales intended to be effected by the above means should be forwarded to Mr. Marsh at least a fortnight antecedent to each of the above dates.  
2, Charlotte-row, Mansion-house, December, 1849.

**PERIODICAL SALE.—FIFTY SHARES IN THE TAMAR SILVER-LEAD MINES.**  
BEARLSTON, DEVON, established upwards of eight years.

**MR. MARSH** has received instructions to include in his next MONTHLY SALE of Reversions, Policies, Shares, &c., appointed to take place at the Mart, on Thursday, June 6th, at Twelve o'clock, in five lots, FIFTY SHARES (£3 called and paid) in the TAMAR SILVER-LEAD MINES, Bearlston, DEVON, established upwards of eight years, and in a most flourishing condition, having paid a dividend during the last half year at the rate of 20 per cent.

Particulars may be obtained at the Mart: of S. R. Vaughan, Esq., solicitor, 4, Furnival's-inn, Holborn; and at Mr. Marsh's Reversionary and Estate Offices, 2, Charlotte-row, Mansion-house.

**MONMOUTHSHIRE.**  
**VALUABLE FREEHOLD ESTATE.—MINERAL PROPERTY, with the COLLIERY and FIRE-BRICK WORKS, and all the VALUABLE PLANT, &c.**

**MESSRS. FAREBROTHER, CLARK, & LYE will SELL,**  
at Garraway's, on Thursday, June 27, at Twelve, by order of the Devises in Trust, of the late J. F. Hanson, Esq., a very valuable MINERAL PROPERTY, situated in the Parishes of HEULLEN and LLANTARNAM, five miles from the town and port of Newport, with communication by the Monmouth Canal, on which there is a wharf attached to the works.

The estate comprises 376 acres, and contains COAL OF EXCELLENT QUALITY, and ironstone running under the whole extent, with limestone and paving stone, excellent manager's house, and 17 cottages; also suitable farm buildings. The minerals have been partially opened and proved, and the brick works are of sufficient extent to manufacture 300,000 fire-bricks per month, besides draining tiles. All the coal and iron measures known in this part of South Wales between the Pennant rock and the carboniferous limestone crop out on the estate.

The VALUABLE MACHINERY now used on the works will be included in the purchase. The surface rental, including cottages, is about £200 per annum. The estate is freehold, except 28 acres copyhold at a fine certain, and 87 acres leasehold for 99 years, at a rent of £13 per annum. A railway of two miles in extent, worked by self-acting inclines, has been made through the centre of the property, by which the produce of it is conveyed to the canal.

Full descriptive particulars may be had one month prior to the sale, at the works; the Cardiff Arms, Cardiff; King's Head, Newport; White Lion, Bristol; of Mr. C. F. Phillips, solicitor, 44, Lincoln's-inn-fields; of Mr. J. T. Church, solicitor, 9, Bedford-row; at Garraway's; and at Messrs. Farebrother, Clark, and Lye's offices, 6, Lancaster-place, Strand, where plans may be seen.

**FOR SALE, at TING-TANG, GWENNAF, CORNWALL,**  
a HUNDRED-INCH CYLINDER and CASE, 11 feet long, with piston, plunger, rod, and cylinder bottom to match. This cylinder is admirably adapted for a direct-acting engine, having a strong flange, expressly for being built in a loading (over an engine-shaft), if required, or coal pit. The hold-down bolts, and other articles, will be sold with or without the cylinder. This cylinder has only been worked within the space of two years, and will be sold for the very low price of £7 per ton, to include the case, piston, and cylinder bottom. The piston-rod will be sold with or without the other parts for 5d. per lb. Any company requiring immense steam-power for small capital, will find this an unusual opportunity.

To examine the above, please apply to Mr. E. Hales, on the mine; and for further particulars to Capt. Thomas Richards, Marazion.—April 22, 1850.

**FOR SALE, BY TENDER.—LOSTWITHIEL CONSOLS**  
MINE.—At a General Meeting of the shareholders in the above Mine, held on the 2d inst., it was resolved, that in consequence of the inability of several shareholders to continue their interest in the mine, that the MINE and MATERIALS be advertised FOR SALE, BY TENDER, within three weeks from this time.

Tenders for the same are now solicited. The mine has been worked by the present company nearly four years, and was lately inspected by Mr. A. Murray, Jun., who reported to the adventurers, that to fully develop the mine, by which important results might be obtained, the levels on the east and west side should be extended fully 30 to 40 fathoms, at a cost of £7 per fathom (average), and occupying 6 to 8 months. The engine is 36-inch by 10-feet stroke, and a small additional outlay for pumps would put the mine in an efficient state of working.

Tenders to be addressed to  
JAMES CROFTS, Secretary,  
No. 4, King-street, Cheapside, London.

**MR. JAMES CROFTS, of No. 4, KING-STREET, CHEAPSIDE,** takes the liberty of soliciting the attention of CAPITALISTS (and more particularly so in consequence of the depressed and, in his opinion, still unsafe condition of railway property) to the MINING INTERESTS OF GREAT BRITAIN, as offering, at this time, the SAFEST MEDIUM OF INVESTMENT of any adventures of an acknowledged speculative character, and TENDERS his SERVICES generally for the PURCHASE or SALE OF MINING SHARES.

Mr. CROFTS has at present FOR SALE SHARES in the following Adventures:—

ROCHE ROCK (Tin), in 5000 shares—Cornwall.  
HEIGNSTON DOWN CONSOLS (Copper), in 6000 shares.  
BEDFORD UNITED (Copper), in 4000 shares.  
SOUTH TAMAR CONSOLS (Silver-lead), in 9000 shares.  
EAST TAMAR CONSOLS (Silver-lead), in 9000 shares.  
WEST PROVIDENCE, in 512 shares.  
ESGAR LEE (Lead), in 1280 shares—South Wales.  
BODCAL, or SOUTH WALES (Lead and Copper), in 2000 shares.  
WHEAL LANGFORD (rich Silver, Gossan, and Lead), in 6000 shares.  
LLWYNMALES (Silver-lead), in 1000 shares—Cardiganshire.  
METROPOLITAN STONE COMPANY, in 100 shares.  
WHEAL EMILY (Silver-lead), in 1024 shares—Devon.  
WHEAL TRESCOLL (Tin), in 1000 shares.  
TREGAR CONSOLS (Silver-lead), in 5000 shares.  
CWM ERFIN (Lead), in 1000 shares—South Wales.

In addition to the above, Mr. CROFTS has also generally FOR SALE SHARES in the MINES managed in his OFFICE, where the Cost-books, Lists of Shareholders, and periodical Balance-sheets and Reports may be inspected—viz.:

LAMHEROEE WHEAL MARIA (Copper) in 2048 shares.	2048
WHEAL HENNY (Copper) in 256 shares.	256
LOSTWITHIEL CONSOLS (Copper) in 253 shares.	253
COMBLAWN (Silver-lead) in 500 shares.	500
WHEAL VINCENT (Tin) in 1000 shares.	1000
WHEAL SARAH (Silver, Gossan, and Lead) in 1056 shares.	1056

Mr. CROFTS is NOT A DEALER in SHARES for his own account, but only for principals.

**TO BE OFFERED FOR PUBLIC SALE, on Monday, the 10th day of June, 1850, at the Raven Inn, in ST. HELENS, in the county of LANCASTER,** at Two for Three o'clock in the afternoon, in one or more lots, as may be then and there agreed upon, and subject to such conditions of sale as may be then and there produced, THIRTY-TWO UNDIVIDED (64ths) PARTS, or SHARES, of and in the SANKEY BROOK COLLIERY, situate in PARR, near St. Helens aforesaid, and of

in all and every the Leases, Agreements for Leases, Conveyances, and other Deeds, under which the said Colliery is now being worked, and which comprise the following seams of coal—namely,  
THE HIGHER DELF.  
THE MAIN DELF.  
THE ST. SEBASTIAN DELF.  
THE ROGER DELF.  
THE SIR JOHN MINE.  
THE RUSHY PARK MINE.  
THE LITTLE DELF.

The above-mentioned mines are all well opened and in full operation and good working order, and producing upwards of 100,000 tons of coal annually.

They are held under various leases, and agreements for leases from various parties, for various terms, and at very reasonable rents.

It is estimated that there are upwards of 1800 large or Chealsea acres of coal, of 1 ft. thick, ungoten in the mines, and laid dry by the present workings.

The machinery and plant is all very efficient and in good working order, and will be sold with the mines.

The collieries are situated in the township of Parr, on a branch of the St. Helens Railway, and there is likewise a branch railway laid down from them to the Sankey Canal, which there is erected a tipping machine for loading flats and other vessels, and the owners have a right to a tipping stage at the Widnes Docks for all coals sent down the St. Helens Railway.

The colliery has been established nearly 30 years, and enjoys an old and valuable connection, not only in the immediate vicinity, but also in Liverpool, and in the salt districts of Cheshire, besides an extensive steam and export trade at the part of Liverpool; and as the coals are known to be of the best quality, an opportunity is afforded to capitalists and others desirous of embarking in the coal trade, which seldom presents itself.

Any further information respecting the colliery may be obtained on application to Mr. John Mercer, land and mine surveyor, Belle Vue, Cowley-hill, near St. Helens, or Mr. C. Williams (at the office of the colliery), who will show plans of the colliery workings, or to Messrs. Ansell and Haddock, solicitors, St. Helens.

St. Helens, May 18, 1850.

**TO CAPITALISTS.**—More particularly those concerned in MINING OPERATIONS.—WILL BE SOLD, if a suitable offer is made, in the county of CORK, a most desirable PROPERTY containing SIX HUNDRED AND FIFTY-EIGHT ACRES, situate measure, let to one solvent tenant, at the yearly rent of £420 per annum, for the term of 99 years, 20 of which have expired.

The property is situated within 4 miles of the post town of CLONAHILTY, and the lands are of the first quality; the rent is punctually paid by the lessee, who has an interest of fully £300 a-year out of the lands, and the poor-rates have never exceeded 2s. 3d. in the £1.—To a Capitalist or Mining Company this would be a most valuable investment, as there is no doubt of there being both COPPER and LEAD MINES on it. The Royalty would be sold with the property—the great advantage of having the Royalty to such parties is too apparent to require comment. Sir John Barry, Bart., Sandy-Mount, Dublin, he will sell the property under the "Encumbered Estates Act," which will expedite the sale, and ensure the title; but ample security must be given as to the honourable intentions of the parties offering, as there is no necessity for the sale of the property, and it will not be sold without the full value of it is given.—Further particulars will be given on application to Sir John Barry, Bart., Sandy Mount, Dublin.

TO CONTRACTORS, BUILDERS, AND OTHERS.

**TO BE SOLD, BY PRIVATE CONTRACT, the ENGINES, MACHINERY, &c., which have been used in the erection of the Britannia-bridge, consisting of ONE 40-horse HIGH-PRESSURE ENGINE, with 18-inch cylinder, and 3-feet stroke, with boiler, complete, drum and hoisting gear; ONE 25-horse HIGH-PRESSURE ENGINE, with 14-inch cylinder, and 2-ft. stroke, with portable boiler complete, drum and hoisting gear; travelling cranes, landing cranes, setting machines, single and double purchase crabs, blocks, chain and tackle of every description, and of first-rate quality.—Application to be made to Messrs. B. J. Nowell and Co., at the works, Britannia-bridge, Bangor, North Wales.**

**EAST OF SCOTLAND MALLEABLE IRON COMPANY.**  
The Directors have been authorised to RECEIVE OFFERS for the PURCHASE, or LEASE, of the MALLEABLE IRON WORKS at DUNFERMLINE—comprising a STEAM-ENGINE, of 80-horse power, working the machinery, consisting of FORGE and 2 PUDDLE BAR TRAINS, of 16 inches diameter, HAMMER and PATENT SHINGLING MACHINE; also a 16-inch MERCHANT BAR or RAIL MILL, a 12-inch MILL, for ordinary sized merchant bars, and an 8-inch GUIDE MILL, 13 PUDDLING FURNACES, and 6 MILL FURNACES—the whole capable of producing 120 tons of bar-iron weekly.

A REFINERY STEAM-ENGINE, of 45-horse power, with blowing apparatus, complete, and two sets of WORKSHOPS, containing a 20-horse power STEAM-ENGINE, driving a powerful roll-turning lathe, and lowering apparatus for smiths' fires.  
A PUMPING and CLAY MILL STEAM-ENGINE, of 16-horse power, used for the manufacture of fire-brick, and pumping water for supply of engines.

Also, in course of erection, a STEAM-ENGINE, of 80-horse power, intended to drive the mills apart from the forges, having strong cast-iron framing laid down, and machinery suitable on the premises, which could be brought into active operation in a short period. Together with the necessary TOOLS, IRON MACHINERY and STOCKS, of different kinds.

Offers will also be received for the PURCHASE of the ESTATE of TRANSY, consisting of about 107 imperial acres, with elegant MANSION-HOUSE and PLEASURE GROUNDS, situated about half a mile to the east of the town of Dunfermline.  
Applications may be made to Mr. James Inglis, Chairman of the Company; or to Johnstone, Russell, and Craig, writers, Dunfermline.  
Dunfermline, March 15, 1850.

**WARLEGGAN CONSOLS TIN AND COPPER MINES.**  
(Situated on the CARADON RANGE, in the parish of WARLEGGAN, in the COUNTY OF CORNWALL.)  
CONDUCTED ON THE COST-BOOK SYSTEM.

Ten shillings to be paid down, and the remainder, if required, in sums not exceeding 2s. 6d. per share, and at intervals of not less than three months.

The operations on the mines are now being proceeded with, under the most favourable prospects.—(See reports from the mines).—The share list will be closed in a few days.

Applications for the remaining shares may be made to the secretary, W. L. Ternan, at the offices, 28, Threadneedle-street, London, where reports and a plan of the mines may be seen, and further particulars obtained.

**MENDIP HILLS MINES COMPANY.**—At the Annual General Meeting of Shareholders in this Company, held at the offices, Salvador House, London, G. H. BARWELL, Esq., in the chair.

The following resolutions were passed unanimously:—  
Resolved,—That the Reports and Accounts now read be received, adopted, and entered in the Company's Cost and Transfer Book.

Resolved,—That the best thanks of the meeting be given to the Chairman, for his able and constant personal attention to the works during the last year, and for the readiness with which he has entered into explanations to-day on matters connected with the undertaking.

**WANTED, in a MANUFACTURING BUSINESS and IRON TRADE, A PARTNER,** who can command from £5000 to £8000, and who may be actively engaged or otherwise. The business is well established, and in full operation, yielding good profits, and capable of considerable improvements.—Communications, addressed to "A. B.," 25, Basilhall-street, London, will have prompt attention.  
N.B.—None but principals will be treated with.

**WANTED.—A COPPER ORE SMELTER and REFINER,**  
TO GO ABROAD, for a short or long period. He must be perfectly acquainted with the most approved method of smelting copper ores, with the least possible consumption of fuel.  
Address, pre-paid, "F. L.," Mining Journal Office, 26, Fleet-street, London.

**WANTED TO PURCHASE.—A SECOND-HAND HIGH-PRESSURE NON-CONDENSING, or a CORNISH, STEAM-ENGINE,** with two boilers, each sufficient to work the engine—the power to be about 40 or 50-horse. Also a PUMPING APPARATUS.—A description of the engine and pumping apparatus to accompany the tender—stating maker's name, the condition of the machinery, and price at the works.—Address "A. B.," Queen's Hotel, Birmingham.  
May 20, 1850.

**SECRETARY WANTED.—WANTED, for a Metropolitan Gas Company, a SECRETARY,** possessing education and good address, whose qualifications extend to a thorough knowledge of business and commercial accounts—preference will be given to parties conversant in gas affairs.—Address (under cover) to the Chairman of the Equitable Gas Company, 21, John-street, Adelphi, London, on or before the 17th June next, marked "Secretary" in the corner of the envelope. Testimonials, or copies of testimonials, to accompany the applications.

**TO FURNACE MANAGERS.—WANTED, at an old established Iron-Works, a PERSON to TAKE CHARGE of THREE BLAST-FURNACES,** who is thoroughly acquainted with the adaptation of Cold and Hot Blast, and the regulation of the Heaters and Apparatus; also to SUPERINTEND the COOKING and MINE BURNING, both in kilns and open. He must be able to write well, so as to keep the necessary accounts. A forge and mill, capable of turning out a large make of finished iron per week, are connected with the furnaces, the whole being under a general manager.  
Apply by letter, in applicants' writing, to "T. J.," Post-office, Wolverhampton, stating age, qualifications, references, and salary required.—May 16, 1850.

**CONSULTING SHAREBROKERS.—"FACTS AND FIGURES."**

**MESSRS. R. B. WATSON & CO.,** lately of Leeds, and formerly of Hull, have resumed BUSINESS, as CONSULTING SHAREBROKERS, in LONDON. In the former place R. B. W. acted as a sharebroker for 10 years, and in the latter, as a commercial broker, for 10 years.

Having drawn up the last half-yearly accounts of the principal railways, upon one uniform plan, they propose offering to investors, but not to mere speculators, their opinion of railways, founded upon these facts and figures.

For terms, and a circular, apply at No. 39, Old Broad-street.

**MINING PROPERTY.—Mr. HERRON has SHARES in the best DIVIDEND MINES FOR SALE,** and which will give to the purchaser 17 to 25 per cent. for the outlay; amongst others are the following:—Trevisky, Trelawny, South Tolgas, East Wheel Rose, Great Devon Consols, West Buller, South Wh. Frances, South Wheel Rose, Stray Park, Botallack, United Mines, Goginan, Tincroft, Treleigh, Bedford United—Imperial Brazilian, St. John del Rey, United Mexican, Cobre, and Santiago Mines.—Mining Offices, 33, Clement's-lane, Lombard-street.

**MINING INVESTMENT.—Messrs. BOXALL & CO.,** CROSBY HALL CHAMBERS, BISHOPSGATE-STREET, are PURCHASERS of SHARES in the following MINES:—Wheal Goolan, Penzance Consols, Wheal Langford, Bryn-arian, West Polgoth, Runnabook, Wheal Sarah, Henock Silver-lead, Wheal Franco, Daren, Wheal Mary Ann, Tincroft, Coombe Valley Quarry, and South Wheel Rose; they also have SHARES FOR SALE in Wheal Providence, Devon Great Consols, Kingsfold and Bedford, South Flann Wood, Herodfoot, Alfred Consols, Wheal Treoscill, and Wheal Carpenters.  
HENRY BOXALL.

**MINING OFFICES, 13, GEORGE-YARD, LOMBARD-STREET.—OFFICES OF THE HERODFOOT MINE; KESWICK MINING COMPANY; WHEAL VENTON; and the BLACK CRAIG and CRAIGTOWN CONSOLIDATED MINES.**  
JOHN WATSON, Secretary.

**MR. EVAN HOPKINS, C.E., F.G.S., CONSULTING MINING ENGINEER.**  
OFFICE, No. 13, AUSTINFRIARS, LONDON.

Mr. HOPKINS may be consulted daily by Noblemen, Gentlemen, and Capitalists, who have invested, or may wish to invest, their capital in MINES or MINERAL PROPERTIES, on all matters connected therewith (Home and Foreign).

Every description of Mineral Property inspected and reported on, and distant capitalists may receive periodical advice, in the German, French, and Spanish Languages.

**MR. TRIPP, MINE AGENT, EXCLUSIVELY FOR PRINCIPALS,** is instructed to transact BUSINESS in most of the best DIVIDEND-PAYING MINES; also in NEW ONES, having present and prospective advantages, of which some are the following:—Devon Great Consols, West Buller, West Goginan, Conderrow, Wheal Margaret, Trevisky, East Wheel Rose, Alfred Consols, Stray Park, North Rose, Cook's Kitchen, Wheal Treasury, Wheal Comfort, Penzance Consols, Wheal Tre-mayne, South Tamar, Tamar Consols, Wheal Penhal, Kingsfold and Bedford, Henock Lead, Bodmin Consols, St. Lago, Linares, St. John del Rey, &c.

**MINING AND SHARE OFFICES,**  
ST. MICHAEL'S CHAMBERS, ST. MICHAEL'S-ALLEY, CORNHILL, LONDON.

**MR. T. A. READWIN, MINING OFFICES,**  
2, WINCHESTER-BUILDINGS, OLD BROAD-STREET, LONDON.

**MR. C. S. RICHARDSON, CIVIL ENGINEER, LAND AND MINING SURVEYOR.**  
No. 15, OLD BROAD-STREET, LONDON.

**MR. GEORGE BATE, JUN., CIVIL ENGINEER AND SURVEYOR.**  
Offices in Queen-street, corner of Piper's-row.  
N.B.—UNDERGROUND MINING SURVEYS accurately executed.

**JAMES LANE, MINING SHARE DEALER,**  
80, OLD BROAD-STREET, LONDON.

**CRAIG DDU SLATE COMPANY.—THE ANNUAL GENERAL MEETING** of the Craig Ddu Slate Company will be held at the offices of the Company, 25, Parliament-street, Westminster, on Thursday, May 30, 1850, at One o'clock precisely.  
HENRY SMITH, Secretary.

**MEXICAN AND SOUTH AMERICAN COMPANY.**  
No. 10, New Broad-street-mews, May 24, 1850.—THE FIFTEENTH ANNUAL GENERAL MEETING of the Proprietors of Shares in the Mexican and South American Company will be HELD at the office of the Anglo-Mexican Mint Company, No. 5, Broad-street-buildings, on Wednesday, the 12th day of June next, at One o'clock precisely.  
At this meeting a DIRECTOR will be elected in the place of J. D. Powles, Esq., who retires by rotation, but is eligible for re-election, and will be proposed accordingly.  
H. W. SCHNEIDER, Managing Director.

**STEAM TO INDIA AND CHINA, via EGYPT.**—Regular MONTHLY MAIL (steam conveyance) for PASSENGERS and LIGHT GOODS to CEYLON, MADRAS, CALCUTTA, PENANG, SINGAPORE, and HONG-KONG.

THE PENINSULAR AND ORIENTAL STEAM NAVIGATION COMPANY BOOK PASSENGERS and RECEIVE GOODS and PARCELS for the ABOVE PORTS by their steamers—starting from Southampton on the 30th of every month; and from Suez on or about the 10th of the month.

BOMBAY.—Passengers for Bombay can proceed by this company's steamers of the 29th of the month, to Malta, thence to Alexandria by her Majesty's steamers, and from Suez by the Honourable East India Company's steamers.

MEDITERRANEAN.—MALTA.—On the 20th and 29th of every month. CONSTANTINOPLE.—On the 29th of the month. ALEXANDRIA.—On the 20th of the month.

SPAIN AND PORTUGAL.—Vigo, Oporto, Lisbon, Cadiz, and Gibraltar, on the 7th 17th, and 27th of the month.

For plans of the vessels, rates of passage-money, and to secure passages and ship cargo, apply at the company's offices, No. 122, Leadenhall-street, London; and Oriental-place, Southampton.

**ROYAL POLYTECHNIC INSTITUTION.—COURSE OF TWENTY LECTURES,** of two hours each, on USEFUL PRACTICAL CHEMISTRY, under the direction of J. H. PEPES, Esq., adapted for Manufacturers, Schoolmasters, and Students. The Course will be a systematic Series on the Elementary Details and Manipulations of Chemistry, the Atomic Theory and Symbols, Preparation of Gases, Acids, Saline Bodies, Qualitative and Quantitative Analysis.  
To commence on the 27th inst.—Fee, including admission to the Institution during the Course, Two Guineas.  
R. I. LONGBOTTOM, Secretary.  
Analyses of Soils and advice to Farmers at very moderate charges.



## Transactions of Scientific Bodies.

## MEETINGS DURING THE ENSUING WEEK.

MONDAY	Geographical—3, Waterloo-place	7 P.M.
	British Architects—16, Grosvenor-street	8 P.M.
	Medical—3, Bolt-court, Fleet-street	8 P.M.
TUESDAY	Horticultural—21, Regent-street	1 P.M.
	Medical and Chirurgical—53, Berners-street	8 P.M.
	Civil Engineers—25, Great George-street	8 P.M.
	Zoological—11, Hanover-square	8 P.M.
WEDNESDAY	Society of Arts—Adelphi	8 P.M.
	Royal Botanic—Inner Circle, Regent's Park	3 P.M.
THURSDAY	Royal—Somerset-house	8 P.M.
	Antiquaries—Somerset-house	8 P.M.
FRIDAY	Royal Institution—Albemarle-street	8 P.M.
SATURDAY	Asiatic—5, New Burlington-street	2 P.M.

## ROYAL INSTITUTION.

The subject of Dr. Faraday's fourth lecture, on Saturday, was "a chimney." The importance of chimneys, and the great work they perform in clearing away, not only the products of combustion, but the air vitiated by respiration, were strongly insisted on, and numerous illustrations were presented for the purpose of showing the amount of work done by a chimney. A parlour fire will consume, in 12 hours, 40 lbs. of coal, and the combustion of that weight of fuel will vitiate 42,000 gallons of air, so as to be unfit to support life. Not only that large amount of deleterious products carried away and rendered innocuous by the chimney, but five times that quantity of air is also carried up by the force of the draught, by which means the ventilation of our apartments is effectually maintained. The actual weight of matter, indeed, that ascends a chimney, in the course of 12 hours exceeds 2000 lbs. To show how the expansion of the air operates in causing the ascent of smoke up a chimney, Dr. Faraday heated a glass tube closed at one end, and then inverted it in a dish that contained coloured liquid, which ascended the tube several inches as soon as the air expanded by the heat contracted by being cooled. The height to which the liquid rose showed the quantity of air that had been expelled from the tube by heat; consequently, that the column of heated air was so much lighter than an equal column of cold air. Several experiments were exhibited for the purpose of showing the force exerted by the draught caused by the ascending column of heated air in a chimney, among which was an illustration of a descending flue. A coloured flame was held near the end of a tube that was bent like an inverted syphon. As soon as the tube was heated, the ascent of the air within the longer arm of the tube drew the flame downwards into the shorter arm with considerable force. Since the ascent of smoke up a chimney depends on the comparative lightness of the column of air within to that of an equal column without, therefore the longer the chimney the stronger will be the draught, if the fire be sufficiently great to heat the air; but if the chimney be so long that the air is cooled as it approaches the top, the draught is diminished. Dr. Faraday mentioned a case of this kind that occurred at the lighthouse on the south of the Isle of Portland. The chimney which ventilated the building and the lantern was carried on the outside, and in winter time the draught was so much impaired that the windows became dim and the lights obscure. He was commissioned to examine into the cause, when he ascertained that, owing to the exposed situation of the chimney, the air within it was, in cold weather, rendered heavier than the air in the building. An attempt had previously been made to remedy the defect by lengthening the chimney, but that had made it smoke more; a model of the chimney was exhibited, and by means of a frigorific mixture applied externally, the effect described was exemplified. A chimney sometimes smokes in consequence of the more powerful draught of another chimney communicating with the same room, for if the supply of air to the larger fire be not sufficient, the direction of the current of smoke up the chimney of weaker draught will be reversed. Chimneys frequently smoke in consequence of the wind blowing down them; but this defect may be remedied by altering the construction of the top, so as to give the wind an ascending direction. If that be attended to, the wind increases the draught of a chimney. As an exemplification of the best mode of presenting surfaces to resist the force of the wind, Dr. Faraday adduced his personal experience during the past week on Woolwich Common. He said he had put up his umbrella to screen himself from the wind, and in the first instance he naturally held it to windward. This, however, had a very imperfect effect. He then changed the position of the umbrella, and placed himself between it and the wind; by which arrangement, though apparently quite exposed to the wind, he was much more protected. To illustrate this effect, a convex glass, to represent the umbrella, was mounted on a rod, and a lighted candle was placed near the centre. When the glass screen was moved forward with the candle behind it, the flame flickered, owing to the air rushing in to supply the place previously occupied by the glass; but when the candle was advanced in front of the screen, the flame burned steadily. The application of a jet of steam to increase the blast of locomotive engine furnaces was illustrated in a variety of ways. In the first place, the lower end of a bent glass tube was placed in a dish which contained coloured liquid, the upper end being inverted into a larger and horizontal tube. A jet of high-pressure steam directed through the larger tube caused such a rush of air to supply the place of the air expelled by the steam, that the coloured liquid rose to the top of the tube. The effect of the steam jet was also illustrated by the smoke of gunpowder, which was blown from one end of a long iron tube, at which it was ignited, to the other end, whence it issued like smoke from the mouth of a cannon. In conclusion, the mechanical force of a jet of high-pressure steam was shown, by causing it to sustain in the air an egg, which was seen dancing about without anything apparent to support it.

## PROFESSOR ANSTED'S LECTURES ON PRACTICAL GEOLOGY.

The interest excited by Professor Ansted's lecture at the Royal Institution appears to be on the increase—the members present in the theatre on the 23rd inst. being far more numerous than on any previous occasion.

Professor ANSTED commenced by stating that the subject of that day's consideration would be mineral fuel generally, and coal more particularly, together with the vast importance of practical geology in obtaining a supply of this most useful material. The substance known to chemists as carbon, and popularly known under many other terms, was very widely distributed throughout nature. The different forms under which carbon presented itself was one of the most interesting facts of which the man of science was cognisant. In its most crystalline form it furnished the glittering diamond—when almost crystalline it gave to the artist the black-lead of his pencils, and it diffused light and warmth through their habitations and cities during the inclemency of winter, in the shape of coal and its products. These were three very distinct conditions in which this remarkable substance was found. Fuel was obtained directly from the vegetable kingdom in the shape of wood, peat, turf, and lignites, but there were many other substances which might be used as fuel if there were large quantities of them, and they were not more usefully employed in other ways. An instance of this kind was amber, which presented carbon in a shape well calculated for fuel, but of course it was put to purposes better suited to its other qualities—its value and the smallness of its quantity. He would, however, proceed at once to the subject of coal, and first as to its association and distribution. It was generally found in beds associated not merely with other minerals, but with the remains of vegetation; and in this way the subject connected itself geologically with different periods of the earth's history, at which the condition of the vegetable kingdom in these islands was altogether different to that with which we were familiar, and more like that exhibited in some of the islands of the southern hemisphere. The fossils found in the beds associated with coal, and sometimes in the coal itself, proved that there had been at one time large tracts of land covered with a luxuriant vegetation, and others with plants of the fern species.

The learned Professor here directed attention to a series of diagrams, exhibiting the various coal plants which had been discovered, and which certainly presented most decidedly all the characteristics of tropical vegetation.

There were also distinct groups of coal beds in different geological positions, but the phenomena of most importance were their geographical distribution. In England we had a large supply of this mineral—so large in proportion to the extent of surface, that England must always be considered as highly favoured with reference to this most important substance. It was a fact, however, that we owed our eminence as a coal country rather to the use we made of the material we possessed, and the convenient way in which it was placed, than to the largeness of our supply; other countries, and particularly the United States, having also enormous coal-fields. Great Britain yielded annually 31,500,000 tons; Belgium, 5,000,000 tons; the United States, 4,500,000 tons; Prussia, 3,500,000 tons; and France, 4,500,000 tons. Great Britain had a vast preponderance in the quantity of fuel, thus derived from her beds, but those beds were by no means excessively large when compared with those of other countries. In the United States there were 183,000 square miles, or 1-17th of its whole area, underneath which was coal; in British America, 18,000 square miles, or 1-45th of its area; in Great Britain 12,000 square miles, or 1-10th of its area; France and Belgium comparatively nothing, although the beds were well worked in those countries.

These proportions were represented in a diagram.

The following table would show in a striking manner the mineral wealth of Great Britain; it showed the annual value upon an average of the three years ending with 1846, made up from official returns:—

	Annual Value.
Great Britain	
Iron—1,500,000 tons	£25,000,000
Coal—35,000,000 tons	10,000,000
Salt, alum, building materials, &c.	1,500,000
Copper, tin, lead, and other metals	3,000,000
Total	£23,500,000

The average annual value of all the gold and silver obtained in all other countries of the world. £13,000,000

The value of coal was influenced by some of the conditions which he had mentioned as affecting slate, particularly that of conveying it cheaply and con-

veniently, and this accounted for English coal being much in demand in countries which had coal of their own. For this reason English coal was much used in France, although it was true the quality of that obtained in the latter country was somewhat inferior. The learned professor then drew attention to the geological map of England, upon which all the coal measures were distinctly marked. The most remarkable was that great coal district in the neighbourhood of Newcastle and Durham, which was 50 miles long by 20 miles broad, and contained 600 square miles. It was placed, with a large portion of its area, upon the coast, or upon the Tyne, and other rivers, which gave it an easy access to the shipping ports, so that the cost of conveyance was small as compared with the value of the material. The coal, however, did not fetch a high money value upon the spot—not more, perhaps, than from 7s. to 9s. per ton; but it was worth more than double that sum at London, even before it was landed at the wharf, and thus a profitable trade was carried on by the coal dealer. In this district there were more than 40 distinct beds of coal; 18 were considered workable, and the rest were too thin to pay. The total average thickness of the workable coal was about 4 yards; each particular bed was from 2 or 3 feet up to 7 feet in thickness. There was also a great and often a vast preliminary expense in sinking down to the coal; a knowledge of geology was, therefore, practically a matter of the highest importance, in order that the miner might learn where he could make his shaft with the greatest certainty of reaching good and profitable seams. The coal varied considerably, and there were two or three very distinct kinds; that called "coking coal" contained 70 or 80 per cent. of carbon, and about 5 per cent. of hydrogen gas. Of course, the smaller the admixture of earthy impurities, sulphur, and phosphorus, the better the coal. The presence of the two latter very much affected the value of coal used for smelting. The Newcastle coal-field yielded annually about 6,000,000 tons; it embraced 124 collieries, and employed 8500 people underground. The same beds re-appeared, and were worked at Whitehaven, on the north side of the lake district; there were there 120 square miles. The next in importance to the Newcastle coal-field was the South Wales, extending over an area of 1200 square miles, and it was remarkable for the immense thickness of the deposits of coal and its associate beds. There were 84 distinct beds locally named and known. Each seam varied from 1 in. to 9 ft., and there were 23 generally considered workable, yielding a total thickness of coal of 60 ft. About 7,000,000 tons per annum were here raised; but it was chiefly used in the district, and for the steam navy, some of the seams yielding an anthracite coal, peculiarly serviceable for the latter. It would be a curious and interesting calculation to ascertain the actual quantity of coal in reserve. It had been ascertained that the South Wales coal-field alone contained from 60,000,000,000 to 80,000,000,000 tons—a quantity of which it was impossible for any one to realise an idea beyond an assurance, perhaps, that there need be no fears of the supply falling short in Great Britain. The next coal-field in importance were those of Lancashire and Yorkshire, separated from each other by beds of millstone grit. There were 75 beds of coal in Lancashire, and the workable thickness was about 15 ft. The quantity ultimately available in this district was probably more than 8,000,000,000 tons. In Yorkshire there were 500 collieries, but the number of seams was not so large, and the coal was not so valuable as in Lancashire. The fields comprised 1000 square miles. Then there was the North Staffordshire, a pottery district, which supplied a most important part of our manufactures. South Staffordshire was remarkable for containing the thickest beds of coal in this part of the world, they being often 10 ft. thick at one spot. The number of people employed directly and indirectly in the coal mining in this district exceeded 20,000. There were several other smaller coal-fields, amongst which were Derbyshire, Ashby, Nuneaton, Coalbrook Dale, Shrewsbury, and Bristol.

In Scotland there were some important coal measures. Those in Lanarkshire produced 2,000,000 tons annually; there were there from 20 to 30 seams, and the total thickness of the coal was 20 feet. On the Clyde there were 84 seams, the thickest of which was 9 feet. In Ireland there was a great number of small beds, scarcely a county being without one or more.

France, a country of great magnitude, had not more than 1,000,000 acres which contained coal, and of that the greater part, probably, was not valuable, or not workable. The quantity annually raised was about 4,000,000 tons. The coal lay in small basin-shaped deposits, generally upon granite or gneiss. Belgium was far more remarkable for its coal than France, one-twentieth of the whole surface being occupied by coal beds, which produced annually 5,000,000 tons.

In Germany the quantity was very small, being confined to a few localities on the banks of the Rhine and the Moselle; and in Eastern Austria there were one or two small workings. In the north of Spain there was a quantity greater even than that of our own country, and it was by far the most important district on the continent of Europe.

In other parts of the world it was distributed at wide intervals. In Asia there did not appear to be any large quantity, unless it were in China. No doubt mineral fuel existed in that vast country, but where it came from was very uncertain. In India it was desirable that efforts should be made to ascertain whether there were other coal measures besides those in the neighbourhood of Calcutta and in Assam. In consequence of the imperfection of the means of transit, the coal used in India was almost exclusively brought from England.

In South America there was scarcely any; but in North America were the most important coal fields in the world. The quantity was scarcely credible; but careful examinations, which had lately been made, had satisfied men of science that the accounts were not exaggerated. Thus in eight of the states there were 65,300 square miles of coal country. It often lay in horizontal beds; but in some cases was tilted and broken, as in England. There was an important bed in Virginia, which was regarded by geologists with great interest. Like that of St. Etienne, in France, it was of a different geological age to the coal of England. There was no doubt but it was of a much more modern period, while that of India was generally held to be much more ancient. In Pennsylvania there were 400 square miles of anthracite coal country; and in Nova Scotia and New Brunswick there were 10,000 square miles.

In speaking of coal it was necessary, so far as England was concerned, to bear in mind the iron associated with it, in thin bands alternating with the coal, or in nodules or lumps. In many places the thickness of each layer was such as to make it necessary to work them both together. The ore itself was generally of a poor quality; but being associated with the coal and limestone necessary to smelt it, that circumstance made it of more value than a purer ironstone under different conditions, and that was really the secret why in this country we had such enormous iron manufactures. Where the ironstone was of a richer quality it was of a darker colour, and was then known by the name of "black band."

In bringing this lecture to a close, the learned professor drew the attention of his auditory to the vast importance of coal to a country like England; and the great beneficence of the Creator in so overruling its conditions, as to make it in the highest degree serviceable to the people. Where should we obtain the means of protecting ourselves from the inclemency of this northern climate, and of shedding a glow of social cheerfulness over our now happy homes if we had not this material so situated on our shores and our rivers, that it could be readily transported to our towns and cities by ships, or to the interior of the country by railroads?—where should we manufacture our iron, if it were not for the abundant and cheap supply of this valuable fuel in the exact spot where the metal occurred? And without coal could we have advanced beyond the ages of barbarism—could we have printed books for the multitude—could we have found raiment for our population—could science have advanced—and might not England have remained in the background, and unable to have exercised that intellectual activity which had placed her in advanced of all the world? Without coal we could have had no applications of steam as now, even if that powerful agent had been discovered—and with steam and coal who could say what bounds were to be placed to the achievements of Science? Looking at the whole question geologically, he was of opinion that if any other fuel of a better kind should be hereafter discovered, it would be by the aid of coal, and the consequence directly of its employment. (Cheers.)

## INSTITUTION OF CIVIL ENGINEERS.

MAY 21.—WILLIAM CURTIS, Esq. (President), in the Chair.

The paper read was "On Printing Machines; especially those used in the Printing of the Times Newspaper," by Mr. Edward Cowper. The object of the paper was principally to describe the machinery which had been in use, at various times, for printing the Times newspaper, other machines being only referred to as assisting to illustrate the subject, for which purpose a brief review of the progress of printing machinery was given.

Some interesting statistics, relative to the printing of the Times, were mentioned, from which it appeared, that on the 7th of May, 1850, the Times and "Supplement" contained 72 columns, or 17,500 lines, made up of upwards of a million pieces of type, of which matter about two-fifths were written, composed, and corrected, after 7 o'clock in the evening. The "Supplement" was sent to press at 7.50, P.M., the first form of the paper at 4.15, A.M., and the second form at 4.45, A.M.; on this occasion, 7000 papers were published before 6.15, A.M., 21,000 papers before 7.30, A.M., and 34,000 before 8.45, A.M., or in about four hours. The greatest number of copies ever printed in one day was 54,000, and the greatest quantity of printing in one day's publication was on the 1st March, 1845, when the paper used weighed 7 tons, the weight usually required being 4½ tons; the surface to be printed every night, including the "Supplement," was 30 acres; the weight of the font of type in constant use was 7 tons, and 110 compositors and 25 pressmen were constantly employed. The whole of the printing at the Times office was actually performed by three of Applegarth and Cowper's four-cylinder machines, and two of Applegarth's new vertical cylinder machines.

The President afterwards briefly addressed the meeting, congratulating the members on the continued success and prosperity of the Institution, and expressing a hope that, during the recess, original communications would be prepared for the next session, so that it might, at least, equal in interest that which had just concluded.

## RECENT AMERICAN PATENTS.

**AXLES FOR CARRIAGES.**—Mr. John J. Flack, Joliet, Illinois, says, "the principal object of my improvement is to do away with friction, so that any given weight can be moved or transported with a comparatively small power, or that a comparatively small power will serve to move or transport any given weight, with much more ease and facility than it can be done without such improvement." Claim: What I claim as my invention, is making the axle concavo-convex, combined with the friction rollers placed in the concavities thereof, in such a manner that the rollers shall protrude from the underside of the axles, downward, and rest upon the boxes in the hub (the upper side of the said friction rollers are never to come in contact with the concavity of the axles), having the whole load or burden supported by the rollers, and thereby save a large amount of friction which occurs in using the common or sliding axles."

**ARRANGEMENT OF STEAM BOILER AND FURNACE THEREOF.**—Mr. H. Boardman, Plattsburg, says, "the nature of my invention consists in giving to the fire box or combustion chambers of boilers the form of an inverted cone or pyramid, surrounded by a water case of the same general form, the thickness of the upper part of which is greater than the lower, and communicating at its upper part, by passages through the water casing, with an inverted pyramidal chamber, by which the products of the combustion are conveyed downwards and discharged below the fire box; the outer or gas chamber is of greater area at its top, where it communicates with the interior of the fire box, than it is at its bottom, where the spent gases are discharged. The combustion of the fuel in the fire box is maintained by a blast introduced in a wind chest beneath the grate, and heated by the spent gases; the inflammable gaseous products of the combustion are burned by the introduction of jets of air at the passages through the water casing." Claims: What I claim as my invention, is giving the combustion chambers of boilers an inverted conical or pyramidal form, so as to make the area of the upper horizontal section greater than that of the lower, surrounding it with a water casing, and with a gas chamber, also of increased capacity at the top, and attaching the several parts to the flat bottom of a boiler, which forms the top of the combustion and gas chambers; the water casing and the flat-bottomed vessel being connected with each other, and the whole forming one boiler, the several parts of which are arranged substantially in the manner and for the purposes herein set forth. I likewise claim the injection of a jet or jets of air at the flues or passages which connect the combustion chamber with the gas chamber, for the purpose of igniting the gases and retarding their progressive motion towards the bottom of the gas chamber."

**ARRANGEMENT OF FILTERS FOR STEAM BOILERS.**—Mr. E. Blunt, Brooklyn, says, "the first part of my invention consists in using, in combination with the feed or supply pipe of steam boilers, and between the boiler and the supply pump or pumps, a series of two or more filters, so adapted and arranged that, after one filter has been used, the feed or supply water can be made to pass through another filter, and thus admit of cleaning the filters without interrupting the supply of water to the boiler. And the second part of my invention, which relates to the cleaning of the filters, consists in connecting the series of filters with the blow-off pipe of a steam boiler, that the water forced out of the boiler may be forced through the filters in the reversed direction, for the purpose of cleaning them out." Claims: What I claim as my invention, is the combination of a series of filters with the supply or feed pipe of a steam boiler, and placed at some point between the supply pump and the boiler, substantially in the manner and for the purpose specified, whether the series be made to shift to the supply pipe, or vice versa. I also claim the above combination of the series of filters and supply or feed pipe, in combination with the blow-off pipe of steam boilers, for the purpose and in the manner specified; and this I claim, whether the series of filters be made to shift to the blow-off pipe, or vice versa, as specified."

**ANGULAR ROTATING TUYERE.**—Mr. Samuel H. Camp, Hartford, says, "the nature of my invention consists in the employment of a square, rectangular, hollow revolving grate or tuyere iron, for forges, perforated with apertures of different sizes, forming bars in the sides, for regulating the admission of air into the fire of the forge, and for breaking the scale of metal by edges of the grate or tuyere iron, when it is resolved to prevent the tuyere from being choked." Claim: I claim the tuyere, of a square, rectangular, or hexagonal form, having edges, and revolving, not on an eccentric axis, but a central axis, to break off the scale formed by the fire upon the metal, by turning round the tuyere, when such tuyere is constructed hollow, and with apertures of different sizes upon its different faces, through which the blast is forced; the whole being constructed substantially as described."

**WORKING THE AIR-PUMP, AND USING A CONDENSING AS A NON-CONDENSING ENGINE.**—Mr. R. F. Loper, Philadelphia, says, "the nature of my improvement consists in the arrangement of the engine within a vessel for propelling, and the peculiar combination of the air-pump therewith, together with the method of converting the engine at once into a condensing or non-condensing engine." Claims: What I claim as my invention is, first, the combination of the air pump with the engine, in the manner set forth, by which I work it more easily, and reduce the number of actions of the valves one-half less than can be done in the ordinary way; I also claim the arrangement for converting the engine into a condensing or non-condensing engine, by opening or closing a free vent for the steam from the condenser, as set forth."

**UNITING METALLIC PLATES TO EACH OTHER.**—Mr. Samuel Pratt, Cohasset, Massachusetts, says, "the nature of this invention consists in making two or more incisions in the hoop plate, near the ends of the same, or in the pieces of metal to be joined, of the form of a right angle, by means of a punch, or in any convenient manner, so as to cause the body of metal between the angular incisions in one plate or piece, or on one end of the hoop plate, to be raised above the surface of the same, and the metal between the angular incisions of the other plate, or opposite end of the hoop plate, to be depressed below its surface, in such a manner as to allow of the projecting portions, near one end of the hoop plate or piece of metal, to be passed through the incisions near the opposite end of the hoop plate, or in the other metal plate, to be joined and locked into the same, and the projecting portions to be pressed together." Claim: What I claim as my invention, is the mode of securing together the extremities of metallic hoop bands, to form hoops or metallic plates, by making angled incisions in the same, and locking the projecting portions of metal between the lines of said incisions into each other, and pressing or hammering them together, so as to form smooth surfaces above and below, in the manner described."

**HARDENING METALS.**—Mr. A. Wheeler, Warwick, Massachusetts, claims, "hardening steel or iron by immersing it below the surface of, and in, water, and then causing one or more jets to play through the body of the water, and against the metal or part thereof to be hardened."

**VALVES OF ROTARY ENGINES.**—Mr. James P. Ross, Lewistown, says, "the nature of my invention consists in the mode of connecting the runner or piston with the annular chamber, the construction, adaptation, and mode of operation of the valve, and the connection therewith of the cut-off when used." Claim: What I claim as new, is the sliding valve, constructed as described, with an exhaust port therein, which is stopped by the piston while it is opening the valve, as set forth."

**MAKING SPIRAL SPRINGS OF WIRE.**—Mr. W. Van Anden, Trenton, New Jersey, claims as his invention, "the entire method of making springs of curved character, in flat or spiral form—viz., by forcing the wire, by notched toothed wheels or otherwise, between friction rollers, tubes, or smooth bars, so as to form a wire spring into a curved and spiral form at the same time, by means of varying the tool as described. Also, the method of varying the size of the curve, by moving the operating tool by a cam, inclined plane, or any similar mechanical contrivance."

**LOCOMOTIVE SPARK ARRESTERS AND SMOKE CONDUCTORS.**—Mr. J. F. Flagg, Boston, claims, "in combination with the deflector for directing downwards the current of sparks in a locomotive chimney, the inverted conical jacket or cullender, when perforated with horizontal holes, and each hole furnished with flanges which project upward within, and downward on the outside of, said jacket, whereby the sparks are directed down into the space between the jacket and the outer case of the chimney, and are prevented from rising upward, as set forth. I also claim, in combination with a horizontal chimney for locomotives, the mouth-piece or inhaler, having two upright partitions meeting in an edge or vertical line at the throat, whereby the two parts of a divided current of air are made to pass around the sides of the interior chimney, and to unite beyond the opening which gives exit to the smoke or gases, in such manner as to augment the draft of the horizontal flue, while avoiding the entrance of the air to the vertical part of the chimney. I also claim, in combination with a horizontal flue for locomotives, the moveable inhaler valves, which form the lateral gorges, for the purpose of creating draft within the horizontal flues, in the manner and for the purposes set forth, whereby the amount of draft may be increased or diminished at pleasure, whether the cars move with one or the other end foremost."

**GAS APPARATUS.**—Mr. A. Walker, Burke, Vermont, claims as his invention, "the mode of washing the gas, or evaporating the acid, the same consisting in the employment of a close horizontal vessel, and a current of water made to flow through it as specified, and passing the gas into one end of the vessel and water, and out at the other end thereof, all essentially as specified. I also claim, the combination of a lime cistern or vessel, with either the gas holder or purifier, in manner and for the purpose as above specified; not meaning to claim the use of lime for abstracting moisture, as the same is a well-known absorbent."

**ANOTHER WONDERFUL CURE OF A DREADFUL SWELLING BY HOLLOWAY'S OINTMENT AND PILLS.**—John Forfar, a farm labourer, of Newbury, near Heston, had an enormous swelling on each side of one of his thighs; he was under the advice of three eminent surgeons, and afterwards an inmate of the Newcastle Infirmary, altogether about two years; but the efforts of the doctors proved useless, as he derived no benefit from their treatment. Hearing so much in praise of Holloway's Ointment and Pills, he determined to give them a trial, and these valuable medicines effected a cure in about eight weeks, although he was working twelve hours a day at haymaking. Afterwards he continued at work, without pain or discomfort, throughout the winter. Sold by all druggists, and at Professor Holloway's establishment, 244, Strand, London.



## Proceedings of Public Companies.

## MEETINGS DURING THE ENSUING WEEK.

MONDAY.....South Wales Railway—Paddington, Two.  
Waterford and Kilkenny Railway—King's Arms, Westminster, One.  
TUESDAY.....Wheal Anderson Mining Company—Royal Hotel, Plymouth, at Two.  
Gas-Light and Coke Company—offices, at Eleven.  
Horne Hay Pier Company—King's-head Tavern, Poultry, at One.  
West Cornwall Railway—King's Arms, Westminster, at Twelve.  
WEDNESDAY.....Gadalscaval Silver Mining Association—offices, at Two.  
Fenbrookshire Iron and Coal Company—offices, at One.  
London Mutual Life and Guarantee Society—offices, at One.  
Tay Vale Railway and Dock Company—London Tavern, at One.  
THURSDAY.....Craig Ddu Slate Quarry—offices, at One.  
Ionian Bank Company—offices, at One.  
West Flanders Railway—offices, at One.  
Hungerford Market Company—offices, at One.  
Royal Naval, Military, and East India Assurance Company—offices, One.  
FRIDAY.....New Zealand Company—offices, at One.

(The meetings of Mining Companies are inserted among the Mining Intelligence.)

## NATIONAL BANK OF IRELAND.

The annual general meeting of this company was held at the establishment, in Old Broad-street, City, on Wednesday, the 22d inst.,  
OCTAVIUS OMMANNEY, Esq., in the chair.

Mr. KING (the secretary) read the following report of the directors:—

## REPORT.

The directors have pleasure in meeting the proprietors, and submitting for their approval the usual statements of the bank's accounts for the past year. The general result of the harvest in Ireland in the last year was, on the whole, favourable, in respect to the abundance and average quality of the grain crops; but Ireland being essentially an agricultural country, the ruling low prices of its products have had a depressing tendency upon the farming interest generally. The loss, however, from the disease in the potato crop has proved less than was at one period anticipated. After four years of unexampled depression and suffering, amongst all classes and interests, it affords the directors much gratification in being enabled to state that there are symptoms of improvement, and indications of returning confidence, which, although slow in their operation, are on that account, perhaps, not the less secure. The directors have deemed it prudent to transact a restricted business; it is their intention to continue in this watchful course until the restoration of credit and confidence has produced its effect on the trade, agriculture, and commerce of the country. Money has been abundant, with a limited field for its legitimate employment, and, consequently, but a low rate of interest could be obtained for a large amount of surplus capital of the bank. All the ascertained debts of the bank have been written off, and the half-yearly dividends, at the rate of 5 per cent. per annum, have been paid. The undivided profits at December, 1849, were—

Reserve fund .....	£50,105 4 4
Balance of profit and loss for 1849 .....	3,990 12 10—£54,095 17 2
Net profits for the year ending December, 1849 .....	19,338 1 3
Total .....	£73,433 18 5
Deduct half-year's dividend to Midsummer, 1849 .....	£11,250 0 0
Ditto ditto Christmas .....	11,250 0 0
Balance of profit and loss carried to that account for 1850 .....	828 14 1—23,338 14 1
Leaving amount of undivided profits to the credit of the reserve fund at December, 1849 .....	£50,105 4 4

The favourable aspect in political affairs generally has been productive of very beneficial results to the trade of the United Kingdom, which continues to exhibit the most marked evidences of improvement; and it is hoped that Ireland will, ere long, largely participate in the general prosperity.

There are now to be elected four directors, in the room of Thomas Lamie Murray, Esq., Sir Ralph Howard, Bart., M.P., John Clement Ruding, Esq., and James Reade, Esq., whose term of office has expired, but who are eligible for re-election, and offer themselves accordingly.

The CHAIRMAN, in moving the adoption of the report, congratulated the proprietors on the general state of their accounts. Although they did not at present divide so much as in former years, he was still entitled to use the word congratulation. (Hear, hear.) Having alluded to the late afflictions of Divine Providence in respect to Ireland, and the difficulties banking had to encounter from the effects of such disasters, he stated that the directors had considered it more prudent to restrict their business, and do it on a safe footing. With this precaution before them, they had, notwithstanding, been enabled to entertain every desire for accommodation that was accompanied with good security. This course had certainly trenchanted on their profits, but had saved the bank from loss, and had enabled them to preserve their rest at the same amount as it was last year—viz., 50,000*l*. (Hear, hear.) This sum was sufficient to meet all contingencies. Every expenditure would be now reduced to the standard of their more limited but more safe business. The amount paid to all the local directors in Ireland was but 900*l*, a year, which he thought a small amount. They had been obliged to wind up one branch at Parsonstown, but still their deposits were increasing in other parts, and there was now a greater degree of confidence in the establishment than ever. (Hear, hear.) He (the chairman) concluded by expressing his confidence that the future would tend much to the increase of banking profits in Ireland, and that a haven of prosperity and happiness was now visible for the safe mooring of the vessel in which they were all embarked. (Applause.)

Mr. NEWSAM having complained of the manner in which he had been ejected from his office of director, and of proxies being paid for by the bank, expressed much concern about the liabilities of the London and Dublin Bank, taken over by this company.

The CHAIRMAN, in reply, said that no proxies for the late election were paid for by the bank. As to the bad debts of last year, they amounted to 12,400*l*, which amount was written off from the gross profits. He had the satisfaction of saying that, in spite of all their losses from the misconduct of clerks, and other causes, their capital was now as intact as ever, besides which they had a reserve of 50,000*l*. (Hear, hear.) As to the London and Dublin Bank and its branches, the directors had the best securities for their liabilities, whilst their branches were amongst the most profitable. (Hear, hear.)

Mr. NEWSAM alluded to former statements of Mr. T. L. Murray, in which he maintained the accounts were mistified, so as to appear more favourable.—This led to some discussion.

Mr. T. L. MURRAY denied that the accounts were mistified; he had always opposed a higher dividend than 5 per cent., though his own interest would have led him to the contrary. (Hear, hear.)

Mr. SMITHWICK hoped the impression which prevailed in Ireland, that there was an anti-Irish feeling at the board of directors was untrue. He felt, however, that if the directors would pay more frequent visits to Ireland, by which they would become better acquainted with their customers, and the circumstances of the country, there would be more business done for the advantage of Ireland, as well as the proprietors.

The CHAIRMAN denied *in toto* that any such feeling as that mentioned by Mr. Smithwick existed at the board, who were always most anxious to do all they possibly could for the benefit of Ireland. (Hear, hear.)

Mr. SMITHWICK observed that he had no objection to English directors, but he only wished them to be more acquainted with the real circumstances of Ireland. (Hear, hear.)

Mr. RUDING said that he was ready at any time to resign his seat as an English director for any one the proprietors might nominate. (No, no.)

Mr. READE (a director) spoke of the great diligence exhibited by the English directors, and also of the honourable conduct of Mr. J. O. Connell, their new director.

The CHAIRMAN said the number of English and Irish directors at the board was nearly equal. (Hear, hear.)

After some further discussion, the CHAIRMAN moved the adoption of the report, and that it be printed and circulated amongst the proprietors.

The motion having been seconded, Mr. POWER moved an amendment to the adoption of the report, which was to the effect that auditors be appointed to examine the books and accounts of this bank, and that they report generally on the management and position of the company. The hon. proprietor grounded his motion on the low price of the shares in the market, which he said would not be the case if their affairs were well managed.—The resolution fell to the ground through not being seconded.

Mr. T. L. MURRAY (a director) observed that no bank could be better managed than the National Bank of Ireland. He was sorry to say that the ill-feeling manifested by Mr. Power arose from his being proceeded against for the defalcations of one of his relatives at the Clonmel branch. The report was then adopted unanimously.

Mr. NEWSAM moved a resolution, that no further advances should be made to the directors.—The CHAIRMAN said that it was no longer the custom of the bank to make such advances.

The retiring directors, T. L. Murray, Esq., Sir Ralph Howard, Bart., J. C. Ruding, Esq., and James Reade, Esq., were re-elected unanimously. A vote of thanks having been passed unanimously to the chairman and directors, and to Mr. King, the secretary, the meeting separated.

## THAMES TUNNEL COMPANY

The number of passengers who passed through the Tunnel in the week ending May 18, was—No. of passengers 16,645.—Amount of money, £69 7*s*. 1*d*.

## Original Correspondence.

## MINING IN WALES—RULES IN MINES.

SIR,—The letter, signed "Hard-Working Miner," in your Journal of the 11th inst., appeared to me at first sight to convey matter which, before that time, I had been ignorant of; and, fancying my knowledge of the district to be tolerably perfect, I forebore to entertain any part of it as being the true character generally of Flintshire mining, although I could not shut my eyes or ears to many things passing around me; but, within the last few days, a matter has come to light, convincing me that all he said, and a great deal more, is, in all probability, true; and from the proceeding now taken by the adventurers of a mine that I will not at present name, matters may come out, and I have no doubt will come before you, as an assistant corrector of all mining mistakes and abuses.

I fully agree with that letter, with the exception of his attributing the fluctuations wholly to the miners themselves, or adventurers in mines. The true fluctuation arises from the following causes:—The exaction of high and extravagant royalties; and, secondly, the disposition in parties to cripple any one who disagrees with trifling dishonesty; and, thirdly, an extremely crying evil—the annual bargain system, on the Halkin and Holywell Mountain, where a grant only of 60 yards long, and 30 yards wide, is obtained, and a stowage, so called, and a rope fixed on it, at any little pit, a few yards deep, is a sufficient plea to their stealing and selling ore from such bargain. This mode of proceeding is the source of theft from established mines, giving, in many instances, the royalty due to one landowner to another.

I feel certain that both the employed and employer know but little of the principle, or of the injury such bargains bring on proper mining; and it will be found, on further looking into, that in such small bargains a large per centage of the ore sold from them has found its way from the established mines of the neighbourhood; and, to my astonishment, the established mines themselves are the letters of such annual bargains to their own men on double royalty, thereby providing them a dependent employment in their own mine, and an independent one in the annual bargain, besides, in many instances, stores of all descriptions for working them, and very often a little ore, too, just trifling, against rent day, or tide time—for the sale of which the greatest facilities are given by jobbers, always ready to buy even less than a pound weight. Do not, Sir, be surprised if I tell you, at some future day, that reserves, laid open in mines of the county some years ago, containing many hundred tons of ore when first laid open, have been found to have considerably reduced, owing to facilities given to fraud; and others will still be found very deceptive—honey-comb like, when taken away; the comb left, but honey gone; hence the dam shutting out capital from the Flintshire mines. But I shall still hope to see mining in Flintshire conducted on true principles, when I think the county will be found to stand high as a mining one, and worthy the attention of capitalists.—A SHAREHOLDER: Manchester, May 21.

## GOLD MINES OF THE DARIEN—EMIGRATION &amp; CANALISATION OF THE ISTHMUS OF DARIEN.

SIR,—I observe, in your last week's Journal, that Dr. Cullen has been in the Darien, examining the rivers and auriferous rocks in the Gulf of San Miguel. This part of the isthmus is principally formed of auriferous granites and porphyries, with innumerable bands of slate passing through, north and south, in vertical planes, which, by decomposition, enrich the intersecting streams and rivers with gold; but there are no plains, or flat banks, at the foot to form extensive deposits, like Choco and California. A French company was formed in Paris in 1846, to work the above gold streams, and other minerals and metals, represented then as being very abundant in the isthmus. I was officially engaged by the Government of New Granada to proceed to the isthmus on its behalf, to inspect the mineral districts, and to meet the French party, previous to commencing operations. I soon found that the parties had been deceived by false reports; and that, although gold washings did exist in many parts of the isthmus, there were none of them worthy of a company's notice.—(See my Report on the Isthmus, as published in the *Mining Journal* of April and May, 1848.) I recommended the French Minister to send all the men back to France immediately from Portobello, to save their lives; but, before this was done, about two-thirds of them died.

The gold washings of San Miguel may do well for the natives; and if Dr. Cullen really intends returning there, and wash them on his own account, I would recommend him to obtain negroes from Choco for that purpose, as being much better adapted for the work, as well as being more capable of living in such a climate as the Darien. His observation as to the most suitable point for effecting a communication, is evidently not from personal examination and surveys of the respective lines, and, therefore, too vague, and not of sufficient importance, to call for any comments.

Austinfriars, May 22.

EVAN HOPKINS.

## SILVER MINES IN CORNWALL.

SIR,—The reply of your correspondent, "S. S.," to Mr. Ennor's remarks on the silver lodes of Cornwall, is not to the purpose. A good silver lode (not a few isolated masses of native silver), if well managed, will pay, doubtless, like other minerals, in proportion to its capabilities. But this was not the question mooted; the point at issue, and what is wanted, is a well-founded statement from a person of experience, showing that such a silver lode exists in that county. The importance of assaying is well understood; but this knowledge, without mining knowledge, leads to very unfortunate consequences. If those who detect little gold in ferruginous "gossans," and silver in the decomposed chloritic slates, are allowed to write loose reports, to induce capitalists to come forward to work them as *bona fide lodes of the precious metals*, they do a great deal of injury to legitimate mining, and fully exemplify the truth of the old saying—"a little learning is a dangerous thing;" therefore, I think the public is indebted to Mr. Ennor for keeping such mine reporters in check.

Austinfriars, May 22.

EVAN HOPKINS.

## ON THE SILVER MINES OF CORNWALL.

SIR,—I feel extremely obliged for your inserting my former letters, and also the replies, in your valuable Journal. Being a well-wisher to all who venture in mines, I merely made my former remarks to call the attention of those persons who get up mining speculations to be more careful in their selection, choosing such as are most likely to be paying ones, without an eye to share-jobbing. My observations on silver mines were general, and without even knowing the agent, or shareholder, in a single mine in the district, that appears to feel it rather keen. I should have felt much pleasure to have had a few dividend-paying silver mines pointed out, which would convince the shareholders that there was a fair chance of remunerating returns: in this your correspondents have completely failed. You are aware of my constant practice to make no remark without my name in full; and I never give a general reply without the writer doing the same. Should your correspondents condescend to do so, I will furnish a more detailed account than appears to be known of these mines.—N. ENNOR: Treborough, May 20.

## FALLACY OF GENERAL RULES FOR MINING.

SIR,—The cursory review, last week, of a work on *Terrestrial Magnetism*, by N. Ennor, induces me to say a few words in contradiction to his remarks on recommending "analysing of the strata about lodes." His recommendation, in my opinion, is absurd in the extreme; I think it would be much more reasonable for him to analyse the rock at surface, to see if roofing slate would be found 60 or 70 feet below; this I will leave him to decide if he pleases, as I understand he knows more of slate quarries than of mines. As to analysing the strata about lodes, from what depth are the assays to be taken?—for surely, Mr. Editor, the depth must be taken into consideration; or does N. Ennor think it is the earth?—if so, I do not; and, if not the earth, pray how deep must we sink for it?—or must we, in the usual way, content to find the lodes, then extract the same, and after this take the rock and analyse it?—or would it be better to analyse the lode as we go on? N. Ennor must have seen great changes in the same levels if he has been, as he says, a mine inspector ("I never inspected a rich mine yet but I found some peculiarities in the stratum about it"); and what would he say if, at the adit level—say, 20 fathoms deep—mineral from thence to surface should be taken away at a large profit?—would he not reasonably suppose there is mineral below also? But in many cases it has proved to the contrary; and, in several places, I have known no ore has been raised until between the 20 and even 40 fm. levels. In such instances, can you analyse the strata about lodes? Again, did N. Ennor ever drive a level 100 fathoms, and the lode keep the same size, and yield the same produce throughout?—and, if not, when must your assays be taken from?—from the poor part of the level, or the rich?—as I presume that both may be said to be strata about the lode. I have seen some men who attempt to analyse the water from lodes, and thus to tell what it is to be; in this I have seen their predictions fail; and, as to laying down a general rule for mining, it cannot be said to hold good.—S. S.: Cullington, May 23.

Errata.—In my last, "On the Silver Mines of Cornwall," read "run on a shovel over a blacksmith's fire," instead of "remain." In speaking of the price of gossan sold, read "from 30*s*. to 50*s*." instead of "30*s*. to 50*s*."

## TERRESTRIAL MAGNETISM.

SIR,—I presume there is not a reader of your Journal who takes greater delight in seeing any information brought forth to assist the practical miner than myself; at the same time, I am equally as jealous of any innovations, and always prefer seeing subjects involving so much importance substantiated by facts. Your correspondent, N. Ennor, has taken upon himself to favour your readers with his opinion on "terrestrial magnetism;" but there is something so ambiguous in his remarks, that I deem them to be contrary to the acknowledged and established system of mining; and I should be obliged to Mr. Ennor to point out a single instance of mineral salts being thrown down from the strata, unless that strata contained some vein, or veins, of minerals; but to expect the strata to bring in mineral salts, unless impregnated with metallic substance, is an absurdity. For instance, if we take copper, are we to have a solution of copper from a killas stratum? I have always considered water, holding copper in solution, comes from the mineral, and not from the strata; and if this is what Mr. Ennor calls a peculiarity in the stratum about lodes, I admit it is a peculiarity indeed.—O. C. F.: Culstock, May 23.

## BRUNTON AND Co.'s SAFETY FUSE FOR BLASTING.

SIR,—I should feel obliged by your withdrawing my name from the advertisement respecting the above manufacture.  
THOMAS STAINSBY.  
Tincroft Mine, May 17.

## CWM ERFIN MINE.

SIR,—In your Journal of the 4th inst. there is a letter by "W.," calculated to throw doubt upon my assertion, that Mr. Taylor refused to accept a reduction of royalty in the Cefn Cwm Brynno Mine. I have strong reason to believe that "W." offers himself as a champion without authority; that he interferes in a matter of which he knows nothing whatever is too plain to be gainsaid. He is, however, fond of expletives, and covers his want of information by largeness of expression. I merely now wish to ask him, is he authorised to deny my assertion as to Mr. Taylor, and the royalty of Cefn Cwm Brynno? I shall not attempt to deny that it does appear (to use the fine language of my opponent) *superlatively ridiculous* that any person in his right senses should refuse to accept a reduction of royalty; but if all differences of opinion as to management of mines between myself and others rested upon grounds admitting of such easy proof as my statement does in this particular, I could soon settle all disputed questions between us; and I am perfectly willing to rest the general accuracy of my observations upon the truth of this assertion, and "W." to try the worth of the statements from my pen by this standard of accuracy. I do not go to proof until I hear from "W.," that he has had authority to negative the assertion that he treats so cavalierly; and if he has so, I will immediately give you written corroboration, justifying my position; but I doubt if I shall ever hear from "W.," again; but you will hear from me again about the management of Cwm Erfin Mine, notwithstanding the virtuous indignation of "W."—A SHAREHOLDER: Rhayader, May 23.

## LLWYNMALEES MINING COMPANY.

SIR,—My attention has been directed to a letter from Mr. Maitland, the purser of this mine, in your Journal of last week. As my name is introduced into that communication, I am quite sure that your sense of justice will permit me to make a few remarks in reply.

Mr. Maitland sets out by asserting that you misrepresented the proceedings of the late two-monthly meeting; but he does not offer the shadow of a proof in support of this charge against you. He gives you the numbers on the division that took place on my resolutions, showing a majority against me; but, if he refers to your report of the meeting, he will find it there stated that my resolutions were "negatived." Surely there was no misrepresentation there. Mr. Maitland, however, unconsciously admits that "9 out of 11" of the adventurers present had always been favoured with a perusal of such letters as he says I call private, soon after their receipt by himself; so that, after all, certain letters have been received, and the gentlemen who voted against my motion have had the privilege of reading them. I shall allow your readers to draw their own inferences from this. Mr. Maitland observes that these letters are such as I call private. May I ask him what he calls them? Were they not specially addressed to himself, and kept amongst his private papers? Were they ever laid on the table with the regular reports to the adventurers, and open to the unreserved inspection of every one interested? Were they not rather seen only by those to whom it pleased him to show them?

I may also state, as a strong reason why Mr. Maitland undoubtedly received more votes than I did, that he is personally known to many, or most, of the adventurers; whereas, I have the acquaintance of but two or three—the others being totally unknown to me. It can easily be imagined the feelings which induce friends to support each other, in preference to those with whom they are unacquainted; but it may be remarked that I never previously had the pleasure of meeting Mr. Carew, who seconded me most ably on the occasion referred to, and spoke most strongly on the subject of the second resolution, chiefly stating that he had occasionally seen the private letters, and that he had extreme objections to such a practice being carried on. I am gratified that I had the good fortune to receive the approval and support of a man who is admitted by all who know him to be of the highest honour, and of the most sensitive ideas of integrity.

Mr. Maitland then goes on to say that he advised some person not to sell their shares, "on account of good advice received [he does not state that he showed or told the particulars of these accounts], which was afterwards fully confirmed in the reports to the board!" Here is, surely, an admission tending to prove that my statements are correct. By "the reports to the board," I presume he means the official reports to the adventurers; but if there was anything important to report upon at the mine, why was Mr. Maitland advised of it, according to his own showing, before it was made known in the accounts to the adventurers generally? Why did not the latter receive advice at the same time?

Allow me here to remind Mr. Maitland of one little incident. At the two-monthly meeting, in March last, the adventurers having complained of the non-receipt of any report from Capt. Henry Francis for a considerable time, a resolution was moved, expressing the disapprobation of the adventurers, and which was amended by the chairman, in a manner which conveyed their sentiments on the subject much more strongly than proposed in the original motion. A shareholder (whose name I could mention) then asked whether there had been any accounts at all from Capt. Francis since the receipt of the last official report (stating the date), upon which Mr. Maitland produced a letter from his pocket, and read therefrom the important statement that a branch of solid lead, 14 in. thick, had been cut, Capt. Francis adding his congratulations that Mr. Maitland had been so fortunate as to purchase—here the reading ended, Mr. Maitland remarking that it was private. Did the above important statement ever appear in the reports open to all the shareholders? Perhaps I may have overlooked it, but although I read the subsequent reports with some attention, at least, I did not observe it. As the purser and secretary of the adventurers in this mine, of course Mr. Maitland lost no time in sending Capt. Francis a copy of the resolution passed at the meeting referred to?

Of Capt. Henry Francis's professional abilities as a miner I know nothing, but I will admit that I am rather pleased than otherwise with the mode in which he has worked this mine. Anything I have said about his letters has been for his good, and it is a matter which he can easily rectify, by discontinuing to write information on the mine to individual adventurers. I have no doubt whatever that he did so with the most innocent views.

I would much rather that I had not been compelled to trouble you with these remarks, but as Mr. Maitland asserted that "no private letters have been received," I had no alternative but to substantiate my statements; and I have only to add that, irrespective of Mr. Maitland's admissions, and of anything contained in this letter, if I think it necessary, I am prepared to give the most conclusive proofs that private letters have been received. In concluding, I must say that, as far as I am concerned, this correspondence will cease, for I cannot enter into a paper war with any one, and all I have stated can easily be proved if required.—J. H. MURCHISON: London, May 22.

## WHEAL SAMSON CONSOLS.

SIR,—In reply to your announcement, that you have received various inquiries relative to the character of this mine, as to its being conducted in conformity with the Cost-book System, and especially as to the constitution of its company, questioning the possibility of their carrying out the arrangement announced in the prospectus—viz.: that there shall be no liabilities, no calls, and no forfeiture of shares—I beg to hand you the following particulars:—

The Wheal Samson Consols is a mine upon which the amount of useful expenditure, to bring it into a paying position, can be more closely estimated than any other which has ever come under my notice. The mine is situated in an estate which is bounded by the Bristol Channel. The lode which runs through the estate is from 6 to 7 ft. wide, and where it has been opened on the back presents a gossan of the richest description, carrying spots of copper and gold, and strings of silver. The lode splits up on coming towards the shore into various branches, in consequence of a piece of hard ground, and the footwalls of the outmost branches form the promontories of the bay. All the branches which have been tested carry ore of a very rich description up to about 10 fms. from the surface. One of the branches has been driven upon some distance from the face of the cliff; it carries ore throughout, and occasionally widens into pockets, or bunches, from which parcels of ore have been returned of a very rich quality for gold, silver, and copper. A drifrage of several fathoms has been made on this branch, and a small parcel of ore was returned, of which the average assay was 9½ per cent. copper, 340 ozs. of silver, 11 dwts. 12 grs. of gold to the ton; but the main lode having then been discovered, and it being ascertained that at a distance of about 60 fms. inland all the branches unite, and form one continuous lode, operations on the branch were discontinued, with the intention of driving the shortest course to the main lode; and it has since been determined to provide a sufficient capital to work the mine effectually, by the sale of a portion of its shares. From the situation of the mine,



per fm. We have taken on with the 68 north of Adams, where the yield is 7.5 per fm. The 71 north of Adams, where the yield is 7.1 per fm. In the 50, south of Smith's shaft, the lode is much the same as last reported. In the 40, north of ditto, the lode is split at present. In the winze sinking under the 30 the lode is split also, and at present unproductive. The stopes are as usual.



**TRELEIGH CONSOLS.**—At Christie's lode, in the 100 fm. level, west of Garden's shaft, the lode is 1 ft. wide, no more ore. In the 90, west of ditto, the lode is 3 ft. wide, worth 61. per fm. The 80 west on the cross-cut, on north part, is suspended for the present; the men are employed sinking a shaft below the lode, the lode is 2 ft. wide, worth 141. per fm. In the 70, west of Garden's, the lode is 3 ft. wide, worth 141. per fm. In the 60, west of ditto, the lode is 3 ft. wide, worth 51. per fm. At present lode, the engine-shaft, below the 40 fm. level, is sinking in the country. The 40 cross-cut, south of ditto, is driving towards the middle lode; the 40, east of ditto, is suspended for the present; the men are employed to rise against the winze in the bottom of the 30; the lode is 2 ft. wide, worth 27. per fm. In the winze below the 30 fm. level, the lode is 2 feet wide, with good stones of ore. At the middle lode, in the adit, east of Nicholson's shaft, the lode is 18 in. wide, worth 21. per fm.

**TREVILLE (SILVER-LEAD).**—The engine-shaft is sunk about 3 fathoms through soft clay—water very little. I hope by the end of this month it will be down 5 or 6 fms. The main lode, although without ore, is still looking very promising in the adit, having more spar and muddle in it. The cauter lode is still in rather unsettled ground, and is looking the same as last reported, with the exception that it is now not underlaid more than 6 inches in a fm. We have levelled for the leads, and find a fall of 60 ft. for the water.

**WEST POLGOOTH.**—On Saturday we shipped our engine, and hope to have it on the mine by Monday next. If the new boiler is completed this next week, in about three weeks we hope to have it to work. A few days since, in clearing the adit east, we met with a fine course of tin, the richest we ever saw in the mine; about 20 sacks were brought to grass, and produced nearly 1000 of tin to the 100 sack of work; it was a piece left by the ancients to support the ground; this lode being so rich accounts why they took it entirely away; the course of tin is evidently gone down. Our tributers are all in high spirits, and are anxious to see the engine at work; a great number of miners are daily coming here, in hopes of getting work on tribute. We think we shall be able to set at a very moderate price, even before we get to the bottom of the old workings. The western winze-shaft is nearly down to the adit; other parts of the mine are looking very well.

**WEST WHEEL JEWEL.**—In the 85 fm. level, west of Williams's cross-course, on Wheel Jewel lode, the lode is looking kindly, producing stones of good ore. In Trowick's winze, in the 79 fm. level, west of ditto cross-course, on the same lode, the lode has not been taken down in the past week; when last taken down it was worth 41. per fm. Carkeek's winze, west of ditto, is worth 201. per fm. The 57 fm. level, west of ditto cross-course, on the same lode, is unproductive. The shallow adit level, west of Trowick's shaft, on Tolcarne tin lode, is worth 41. per fm. The deep adit level, west of ditto shaft, on the same lode, is unproductive. The 12 fm. level, west of ditto shaft, on the same lode, is unproductive; the stones in the bottom of the same level, on the same lode, east of ditto shaft, are worth 241. per fathom. The stones west of Trowick's winze, in the same level, on the same lode, are worth 261. per fathom. These stones are working on tribute.

**WEST WHEEL VIRGIN.**—Since my last report the men have been employed in making the water course for the water-wheel; they have had some deep cuttings to go through, but they have made good the water course, upwards of 50 fms. within the last five days. The carpenters and smiths are getting on with their work about the wheel, and I doubt not, by a little extra exertion, we shall go to work by the 24th June.

**WHEEL BAWDEN.**—Our lode has, in the last day or two, shown favourable indications of improvement, and yesterday some good stones of silver-lead ore were broken from it, very similar in character to the Old Trebuter silver ore; and, by your permission, I will forward a few small specimens for the purpose of assay.

**WHEEL BENNY.**—Our operations have been confined to driving a level 11 fms. below the adit, to prove the Benny lode, which depth will give us, as we extend east, from 60 to 70 fms. of backs; this lode in the adit level east is of a highly promising character, and shall have about 10 fms. to drive in the 11 fm. level, to reach that part which looks so favourable.

**WHEEL FRANCO.**—The lode in the 62 fm. level, east of engine-shaft, is about 3 ft. wide, composed of can, muddle, and ore, and is a very kindly lode. The 47 fm. level, east of engine-shaft, has been driven south of the former level 14 ft., through capels, in order to ascertain if the main part of the lode is not further south, but we have not found anything yet; but would recommend driving through the capels to the south killa, should nothing be met with before. The lode in the winze sinking below the 32 fm. level, east of the engine-shaft, is large and ore, and is a very promising lode. The lode in the 132 fm. level, driving east of Spry's shaft, towards Wheel Massah, has a very kindly appearance, and is producing good stones of ore. We have about 8 fms. from the drive, west of Spry's shaft, to communicate with the 32 fm. level, east of engine-shaft. In the tribute department there is no material alteration. I think we are nearly through the great cross-course in bringing up the deep lobby.

**WHEEL GOLDEN.**—At the engine-shaft, in the 70, north of the cross-cut the branches are all come together, and the lode has progressively been improving in the last 4 feet driving, and still continues both in size and quality; the lode is now 15 in. big, and producing about 18 cwt. of good quality ore per fm.; the ground has also improved, with an increase of water issuing from it—in fact, the lode is a good deal more productive in the 60 fm. level, but as we have but just discovered it, we cannot say any more at present, and will report more fully shortly.

—May 20.—The water has been much quicker in the end of the 70 fm. level in the last few days, which has drained the water from the winze sinking in the 60 fm. level, and that we consequently anticipate raising this part of the mine to a large extent almost immediately. In the south of the 70 fm. level, the newly discovered branch of ore continues productive. At Maxwell's shaft, the 43 fm. level end has improved, producing about 10 cwt. of ore to the fm., and they re-let, on Saturday last, 14 tribute pitches in this part of the mine. Ores sold to the Cornbarrow Smelting Company, 350 tons, at 141. 50d.; costs, 2571. 16s. 4d.; balance in favour of the company, 2461. 3s. 8d.

—May 22.—At the engine-shaft, in the 70 fm. level, north of the cross-cut, the lode has increased in size, since Saturday, from 15 in. to 3 ft. 6 in., and is now producing 34 tons of good quality ore per fathom. We took out one solid stone of ore from the lode to-day, and brought to the surface, which weighed 225 lbs.; the lode is so soft at present we are obliged to put in timber to keep up the ore in the back of the level as we drive on, and the water is issuing out of the bottom of the level. The 70 fm. level south has also improved since last reported. You shall have a general report in a few days.

**WHEEL KINGSTON.**—In conformity with the resolution passed at your last meeting, I immediately after commenced operations, by laying open the back of the lode which was discovered by the former party, for the twofold purpose of ascertaining its true bearing and underlay, which I am pleased to inform you, has been accomplished. I find the lode to be about 7 feet wide, consisting of gossan, muddle, flookan, and soft, white spar—a very kindly lode indeed, bearing due east and west with a north underlay, about 2 ft. 6 in. in the fm. We have also discovered another lode, 1 ft. 6 in. wide, with two well-defined walls, composed principally of dark-coloured flookan, bearing 30° east of north and west of south, which, consequently, forms a junction with the northern outcrop of the lode, this I consider a very favourable feature, and one which greatly enhances the value of your mine, inasmuch as it is often the case when two lodes unite, a rich ore is the result. From the very favourable character of these lodes at the deepest point we have yet seen them (12 feet), it is deemed advisable to sink a shaft, in order to intersect them at the depth of 15 fms. from surface, which is now being done; present depth of shaft, 6 fms.; the strata in which the lodes are imbedded is a light blue slate, with numerous small veins passing through it, varying from 3 in. to 1 foot big, which is exceedingly favourable to the production of mineral.

**WHEEL LANGFORD.**—May 17.—We have commenced stoping the back for silver, and have good saving work; the end is poor at present. The lode in the winze of sink, with some gossan, is a very promising lode. We have contented about 10 fms. west of Malachi's shaft, at a lode to-day, a very promising one, 4 ft. wide, composed of flookan and gossan, interspersed with muddle. Mr. Smith and Mr. Knowles have been here, and surveyed the ground adjoining Wheel Langford. On Monday Mr. Sergeant and one of the committee are to meet them at Devonport, to arrange for the set. This will be a great acquisition; it extends a considerable way west on the course of our lodes. This is the Wheel St. Vincent, marked in the Ordnance Survey of 1869 as Huel St. Vincent Silver Mine, which was very productive.

—May 23.—In my last mentioned that we had opened on the back of the lode about 100 fms. west of Malachi's shaft; the lode is 4 ft. wide, of a very promising character. We this morning commenced raising some of the ore to the surface, and the northern outcrop of the shaft, which will command the principal part of our workings in Wheel Langford. We have still good saving work for silver in the back of the north adit level; the end is without alteration. The winze, which will lay open the western breast of ground looks more favourable for silver. The draft is preparing the set west of us.

**WHEEL SARAH.**—On arriving here, unfortunately the water was in the bottom of the shaft, the third time I have been served this way. I saw the lode which has been hauled to surface, and it is fair promising stuff, with a fair quantity of galena; the 30 fm. level south has been driven 13 fms. in it, and it continues improving; it may be worth at present about 101. per fm., and is driving at 31. 15s. per fm., by six men. The northern end of the 30 fm. level is very poor, also the 20 fm. level driving north above it. The 20 fm. level driving south is fair ground, but not so much gossan. In consequence of the foolishness of all these levels, I think it advisable to suspend the northern outcrop of the shaft, which will command the principal part of our workings in Wheel Langford, and place six men sink a shaft on the course of the lode—say 60 or 70 fms. further south in the valley, so as to hole to the 20 fm. level end, and afterwards to the 30. I found Capt. Sande proceeding very intelligently to work, as regards the gossan; he has about 15 tons ready for sale, dressed without any application of water. The materials for the crusher are ready, but its erection is impeded for want of more timber; this ought to be speedily attended to, otherwise no profit can be obtained from the lode in the 30 fm. level. The main steam-engine still consumes about 10 tons of coal per week, and the more changing a bucket yesterday's morning was the cause of the lower level being drowned during the remainder of the day and night.

**WHEEL VINCENT.**—I have commenced the survey here, but could not inspect the lode at the engine-shaft, on the north lode, in consequence of the water, but I hope to have them clear by to-morrow. The whole of the works are now on an economic scale; those on the side of Beacon-hill, at the wind machine, are suspended for the time, so as to save the expensive drainage by horse machine, and the expensive cross-cut intended for a deep adit, until the exact position and value of the eastern part of the lode is ascertained by a systematic course of costaining. This costaining is now proceeding by two men, and I hope to see the back of the lode discovered by to-morrow. From preliminary observations, I think the cross-cut for a deep adit would take nearly 2 fathoms further driving to cut the lode, and would cost from 154 to 204. per fm., so the suspension is as advisable any how for the present. The northern part of the mine will continue by men driving east, and six men driving west, and by two men in the backs, to raise the west tin shaft; the value of the lode appears to be about 71. 10s. per fm., and the cost for stoping about 21. 10s. to 31. per fm., which, with the charges for dressing, &c., would leave the profitable value at 21. to 31. per fm.; this is the average of what has already been excavated. I shall report more fully on this to-morrow. The amount of tin on the floors is about 10 cwt. I have taken an inventory of all the materials, &c., on the mine, and I have commenced to make a plan of the set, which I will hand to you, with a detailed report, as soon as possible.

## FOREIGN MINES.

## IMPERIAL BRAZILIAN MINING ASSOCIATION.

**Banana, March 3.**—With respect to our operations here in the last 10 days nothing new has been developed. Our different works progress regularly, but I regret to say no work for the washing course has been obtained. The Big Pump vein, in the steps below the 14 fm. level, although promising, has been derived as follows:—Stamps, 8 cwt. 16 dwts.; tubs, &c., in the washing-house, 1 lb. 7 cwt. 13 dwts.—total, 24 lb. 4 cwt. 9 dwts. By the captain's report, it will appear that Gibson's shaft is 7 fm. 4 ft. 6 in. below the 14, but it is really in the deepest part 8 fms. below that level. We are still complete masters of the water, and I have no doubt that our sinking will be continued without interruption. In driving northward of Goldsmith's nothing yet has been met with, but the character of the vein is such as to give me great hopes that something yet will be discovered in this part of the property, where hitherto very little trials have

been made with regard to its development. We have not yet been able to effect the raising of Thomas's shaft, so as to work on the vein in the bottom of it, but if it can be effected, it will be a great advantage. In my opinion, however, our best advantage will be to stop the ground from the back of our intended 24 fm. level; it will require a little longer time before we can get produce from this vein, but it is decidedly the most effective way of prosecuting the mine. I am glad to inform you that the new working barrel arrived safely here on Tuesday; it appears to be well manufactured, and of the description required.

**Gongo Soco.**—I visited this part of your property on Tuesday last, and returned to Banana on Thursday. I am much pleased with the progress making in the different works, but little, however, has been done to the open cutting, the people being required on other work. The regos are now in excellent repair; Goldsmith's stamps, with 10 heads, will be set to work in a day or two, and the Messrs. Tregouing will find, on their arrival, 65 stamp-heads at work, and very shortly 10 more will be added to Goldsmith's, making the whole number 75. The Great Western still continues to yield tolerably well from Bray's barrow; her produce of gold this time has been 1 lb. 3 cwt. 10 dwts., the total produce from the three stamps being 6 lbs. 4 cwt. 7 dwts. Our remittance this time will be upwards of 123 lbs., exclusive of duty.

[Remittance received, per packet, about 123 lbs. gold.]

**LINARES MINES.**—The following has been received from Mr. H. Thomas: **Linars, May 12.**—Wilson's shaft has been sinking during the week in a very good lode, and the ground being at present somewhat easier, we hope for a more rapid progress, for the sake of having a winze-shaft communicated to the third level, and for the benefit of the work on the first and second levels. We have found the distance between the second and third levels to be greater than we were led to expect, being about the same as between the first and second, or 14 fms., making the third 45 fms. from the surface. We hope to be able to take up some water in this level, and we purpose, as soon after our timber arrives as possible, to fix the plunger in the 31, and save the cost of leather and hindrances, as well as to free our working barrels for application to further sinking. The tribute pitches are looking well, that of T. Paul being worth from 6 to 7 tons per fm., and one of the two we are working in the back of the 45 being also about the same value. In Shaw's shaft the lode is showing a little lead; the level is extended under this shaft, or, rather, it will come very close to the end, and being kindly we look for more good by extension of the level than from the lode in the shaft itself, though in general it may be said that the lode appears to the miner very seldom without lead, except for short distances. If our carreters reach Seville in time, the Estacional will take on 60 tons. We are preparing the loading this, of from 30 to 40 tons, in the carts engaged by Mr. Shaw.

**Assays, Pico Ancho, May 1.**  
No. 1 sample, 1822 arr. 73.20 per ct. of lead, and 6 cwt. 16 grs. in 20 cwt. of ore.  
" 1872 " 72.98 " " 6 " 10 " 10 " ditto  
" 4916 " 75.70 " " 6 " 10 " 16 " ditto  
8000—about 94 tons.

To balance of lead ore in stock, as per account furnished ..... 1471 9  
Weighed in week ending May 11, about 10 tons ..... 1352 17  
To next account ..... Arrobas 2828 26  
or, about 33 tons.

## NATIONAL BRAZILIAN MINING ASSOCIATION.

**Cocao, March 2.**—By the continuance of the sinking easterly on the directions of the northern veins, at Hamilton's lower stop, we succeeded, on the 25th February, in making a communication to the upper part of Hartley's lower one; and, agreeably to the last report, resumed operations at the latter point, from which line of ground, on account of its being the confinement of the southern vein at Hamilton's lower stop, which was worked upon in December last, we have every reason to expect a large deposit of gold. The Terra Calida Mine is no less promising than when last reported, although the samples are not quite so good; still the appearance of the lode is improving as we proceed southerly; but the progress is rather slow, for the ground is extremely hard, and the assertions of the people respecting the abandonment of the mine on account of the hardness of the rock is, in all probability, correct.

Cocao produce from 24th February to 5th March ..... Mks. 4 6 1 17

**ST. JOHN DEL REY MINES.**—Morro Velho, Feb. 18.—Gold extracted to date, 6714 ojs., from 408.18 cubic feet of sand, result of 10 days' stamping—16.44 ojs. per cubic foot. Stamps working, 17 days, average 94.75 heads. The supply of stone has so much diminished, since the latter end of January, owing to the number of men employed sinking and driving for the two new pillars, that we are obliged to stamp every thing coming from the mine, good or bad; and as just now killa and inferior ore predominate to a more than usual extent, the result has been as well in January as in this month—a great depreciation in the gold produce; nor, indeed, can I hold out the prospect of a very speedy change in this state of things; for great has been for some weeks the quantity of killa coming up from the bunch. Capt. Treloar and the under captain are now advocating the necessity of removing a bar of killa, which obstructs the play of the kibble chain, from one of the inclined planes on the middle cachoeira. This bar of killa has already more than once caused the breakage of the kibble chains; and to guard against the mischief which might result from a repetition of such breakages, I presume I must consent to its removal, though it will load us with 200 tons of killa more than we should otherwise have to contend with.

**Feb. 27.**—Gold extracted to date, 13,506 ojs., from 774.62 cubic feet of sand, result of 9 days' stamping—17.45 ojs. per cubic foot. The result of the latter nine days' stamping shows a great improvement over that of the first 10 days; for while the first 10 days produced 6714 ojs.—617 ojs. per diem, the succeeding nine days produced 6792 ojs.—755 ojs. per diem. This favourable change I attribute to the circumstance that, at the Gut branch, there has been much less killa broken than during the previous six weeks; and that there has been less of the flinty quartz taken from the bad lode in the East Quebra Panella, alluded to in my last. I am endeavouring to prevent what I consider the bad management of pouring such masses of unproductive stuff at the same moment on the spalling floor, thus, during the first 10 or 12 days, was wretchedly bad, and will produce about 3 tons of ore per fathom, of 20 per cent.; most likely this end will improve as we drive northward into the ground over which Gold's stopes have turned out so much good ore, and there is every reason to expect that the 60 will be a good level. The 40, north from Phillips's winze, has now approached to within 11 fms. of the new shaft; the lode in this end continues to be well-defined and continuous, and in the past month has produced some good yellow ore, although not in such a quantity as to make it valuable in itself, but strongly indicating that we are well justified in pushing forward our operations, and that the ground going northward, for some distance, is a fair chance of our making a more valuable discovery than we have yet made in the mine. In the past month two men have sunk nearly 1 fm. in Stephen's winze, and although the water is not drained sufficiently deep, we have now put six men on, so as to sink it down to the 50 if possible, then to drive south to communicate with the 50, north from Masterman's, for the purpose of ventilation, and laying open the ore ground, and enable us to sink Masterman's shaft below the 30 as soon as possible. The ground in the 60 cross-cut from Masterman's, driving the 10 or 12 days, was wretchedly bad, and yet, in Polkinghorne's winze we are taking down no more than 1 foot in width of the lode, which is spotted with yellow ore, and hard, the principal part of the winze being in granite, and the dip of the lode somewhat more than 2 ft. per fm. The new shaft is now about 94 fms. from surface, and is rather hard for sinking, we have, therefore, employed nine men in it, being convinced of the importance, for the future welfare of the mine, of hastening the sinking of this shaft, without which we cannot extend northwards. At the extreme end of the adit, on Horne's lode, we have driven both east and west sufficiently far to meet with the lode, but we have not so much resembles the strata as to make it difficult to recognise it. A stone of ore has, however, been found in driving west, and a division in the strata, corresponding with the dip of the lode, and on which we now intend to drive south, at 21. per fm.; this ground is, in my opinion, and the subsequent, favourable for producing copper, and we expect to meet with a good lode as we advance into the hill. There are three tribute pitches let, at 12s., 10s., and 12s. in 11. above the 40 fm. level, from which, and from the valuation of the different places, it is at once seen that the ore ground above the 40 is not producing so much ore as has been anticipated in previous reports. The masonry of the steam-engine is now so far advanced, as to allow of the cylinder being fixed in its place in a day or two, and there is little doubt that we shall set it to work in April month; and I scarcely need to state, what every one who understands the nature of mining must know, that a lode, from 6 to 12 ft. in width, and for 30 fms. in length, having produced some 1500 tons of rich ore above the adit, must surely lead to a rich and lasting mine in the deeper levels.

**THE AUSTRALIAN MINING COMPANY.**  
Produce of the mine from commencement to—Total 21 cwt. carted to Port Adelaide, say, 26 per cent, 580; now lying on floors ready for cartage, 18 per cent, 106; ditto not dressed, ditto, 114; balance remaining on floors, from 10 to 12 per cent, 750—total, 1550.  
**Monthly Report.**—In the 50, north from Masterman's shaft, the lode has been cut through, and is 4 ft. in width, a mixture of quartz, yellow ore, and muddle, and will produce about 3 tons of ore per fathom, of 20 per cent.; most likely this end will improve as we drive northward into the ground over which Gold's stopes have turned out so much good ore, and there is every reason to expect that the 60 will be a good level. The 40, north from Phillips's winze, has now approached to within 11 fms. of the new shaft; the lode in this end continues to be well-defined and continuous, and in the past month has produced some good yellow ore, although not in such a quantity as to make it valuable in itself, but strongly indicating that we are well justified in pushing forward our operations, and that the ground going northward, for some distance, is a fair chance of our making a more valuable discovery than we have yet made in the mine. In the past month two men have sunk nearly 1 fm. in Stephen's winze, and although the water is not drained sufficiently deep, we have now put six men on, so as to sink it down to the 50 if possible, then to drive south to communicate with the 50, north from Masterman's, for the purpose of ventilation, and laying open the ore ground, and enable us to sink Masterman's shaft below the 30 as soon as possible. The ground in the 60 cross-cut from Masterman's, driving the 10 or 12 days, was wretchedly bad, and yet, in Polkinghorne's winze we are taking down no more than 1 foot in width of the lode, which is spotted with yellow ore, and hard, the principal part of the winze being in granite, and the dip of the lode somewhat more than 2 ft. per fm. The new shaft is now about 94 fms. from surface, and is rather hard for sinking, we have, therefore, employed nine men in it, being convinced of the importance, for the future welfare of the mine, of hastening the sinking of this shaft, without which we cannot extend northwards. At the extreme end of the adit, on Horne's lode, we have driven both east and west sufficiently far to meet with the lode, but we have not so much resembles the strata as to make it difficult to recognise it. A stone of ore has, however, been found in driving west, and a division in the strata, corresponding with the dip of the lode, and on which we now intend to drive south, at 21. per fm.; this ground is, in my opinion, and the subsequent, favourable for producing copper, and we expect to meet with a good lode as we advance into the hill. There are three tribute pitches let, at 12s., 10s., and 12s. in 11. above the 40 fm. level, from which, and from the valuation of the different places, it is at once seen that the ore ground above the 40 is not producing so much ore as has been anticipated in previous reports. The masonry of the steam-engine is now so far advanced, as to allow of the cylinder being fixed in its place in a day or two, and there is little doubt that we shall set it to work in April month; and I scarcely need to state, what every one who understands the nature of mining must know, that a lode, from 6 to 12 ft. in width, and for 30 fms. in length, having produced some 1500 tons of rich ore above the adit, must surely lead to a rich and lasting mine in the deeper levels.

## THE WORTHING MINING COMPANY.

**Working, Feb. 11.**—The water-wheel shaft is being sunk 3 fathoms, and the ground is now worth 241. per fm.; the end west is being driven 3 fms. 4 ft. 6 in., and now worth 192. per fm.; about 2 ft. behind this end we have cut a flookan, about 1 ft. wide, transmitting a good deal of water, and underlies at an angle of about 45°, and whether it is a regular cross-course remains to be proved; but, from present appearances, it looks more like a aquat, or small deposit of clay. The end shaft is being driven 3 fms. 1 ft., and now worth 31. 15s. per fm.; the lode in this end, I feel happy to say, has improved since last month, containing more spots of ore, a better matured spar, and the ground more stratified, which bids fair to improve in driving into the hill, whose summit to the level of the end is, I should say, 30 fms. more or less. The air in this end and the end west being bad, we have let an air shaft to sink, for the purpose of communicating with the former, 121. is the price for the communication.

JOHN RICHARDS.

**Atleide, Feb. 15.**—We have much satisfaction in stating that, driving south to hill on the east lode, Middle Gully presents a decided improvement, as we approach the hill; and as we are now as near as possible at the foot, we shall be anxious during the next month to ascertain the result of gaining in backs under it, as it will tend in a great measure to direct our proceedings here. You will perceive, by Capt. Richards's report, that about 30 fathoms will be gained in backs, but for which it will be necessary to drive about 120 fms. The works in this part will require our greatest care [here follows a sketch of the locality of this part of the mine], and we have no hesitation in saying, that a fair possibility of this work being done, within the next three months, forms an interesting feature of the mine. You will see in view that these workings are being carried on experimentally, under the recommendation of the visitors' report, on account of its particular locality, and not from any favourable indications exhibiting themselves, and therefore, they may be considered as so far satisfactory. The water-wheel shaft is proceeding satisfactorily; but it will be some months before the result is known.

CHARLES BACK and JOHN HALL, Committee of Management.

## DEVON AND COURTENAY CONSOLS MINING COMPANY.

At a general meeting of adventurers, held at the mine, on the 15th inst., JAMES DIAMOND, Esq., in the chair,—the statement of accounts was presented, showing—Balance against company at last meeting, 872 4s. 7d.; March cost, as per vouchers, 1377 4s. 10d.; April cost, as per vouchers, 1521 6s. 5d.—3761 15s. 10d.—By call of 5s. on 520 shares, when all paid, 1300; leaving balance against company, 2461 15s. 10d.—In reference to the accounts, Mr. Rendle (the purser) states that the amount (about 1001) for the ore sampled on the 26th March, ought to have been placed to the credit side, but which he hopes to receive in a post or two; and they will sell also about 1001 worth of ore more in about a week; this, with the call now made, will place the company in a good condition—the adventurers being determined not to get into debt.—The accounts having been examined and read, and a call of 10s. per share made.—Fourteen applications having been received in reply to an advertisement for a captain of the mine, the testimonials were read, and Capt. Richard Rickard was appointed.—It will be proposed, at the next general meeting, to restore the number of shares to 1024, the number originally constituting the company.—The thanks of the meeting were presented to James Diamond, Esq., for his kindness in presiding on the occasion.

The following report, from Capt. R. Rickard, was read to the meeting:—

**May 15.**—The lode in the engine-shaft is forming a better underlay, and is much larger—being about 3 ft. wide, with regularly-defined walls, composed of killa, peach, muddle, and copper ore. We have sunk, during the past month, 1 fm. 4 ft.; and we are now sinking at 801. per fm. The present depth of the shaft is 4 fms. 1 ft. below the 50 fm. level, which I would recommend to be continued to the 60, and then drive a level east with the greatest possible dispatch, to prove the lode under the bunches of ore driven through in the 50 fm. level. The lode in the 50 end at present is poor; but its appearances are still encouraging. We have driven, during the last month, 2 fms. 4 ft., at a cost of 71. per fm. I have set four men to rise on the cross-course, from the back of the 50 fm. level, to communicate with the level above (price, 40s. per fm.), which I think will be complete during the present month, and which will lay bare the lode, and make an improvement in the ventilation of the mine. After the rise is holed, we shall be enabled to drive the 50 end with much greater facility, which is an object, in my estimation, exceedingly desirable. In reference to the 40 fm. level, it appears to me doubtful whether the south lode has been seen west of the cross-course; to demonstrate this, I would recommend driving a few fathoms on the cross-course south; in the level west, on the gossan lode, the country has taken a complete change, from a congenial kind of killa to a poor slaty strata, through which the level has been driven several fathoms, without the slightest indication of a lode; but presenting merely a division of the walls, with a rapid underlay, and carrying its head further south than the usual bearing of the lode, which is clearly manifest on reference to the working plan of the mine. I find in the adit end that, although the walls do not underlay so flat as in the 40 end, the strata has a similar appearance going east, which change appears to have taken place at the cross-course, about 20 fms. behind the adit end; and the gossan on the back of the lode in this part is by no means so good as it is on the east and west parts of the mine; on this west side of the cross-course, above referred to, there is a large prominent-looking lode for 60 fms. in length, varying from 1 ft. to 2 ft. wide, composed of spar, peach, muddle, prun, and copper ore. About the central part of this ground, there is a part of men sinking on tribute, and although the bunch of ore is not so good in the bottom as last reported on, yet, from the present indications, I think it will improve. There is another lode, about 3 ft. south of this, underlaid north about 2 ft. in a fathom, which, according to its present underlay, will form a junction with the north lode in the adit level at about 6 or 7 fms. in depth, where we may reasonably expect an improvement. I would be completely satisfied, strongly recommending the sinking a shaft in this part of the mine, in order to prove the lode in depth, where I believe the result will be highly satisfactory to the adventurers. We purpose sampling, next week, about 17 or 18 tons of ore, which I estimate to be worth about 1001.

## MENDIP HILLS MINING COMPANY.

The annual general meeting of shareholders in this company was held at the offices, Salvador House, Bishopsgate-street, on the 24th inst.

G. H. BARWELL, Esq., in the chair.

After the usual preliminaries, the following report was read:—

The directors have called you together with satisfaction on this occasion, as they feel themselves more competent to form an opinion on the probable successful operations of the undertaking than at any previous meeting. It will be borne in mind that, at the last meeting, it was agreed to prepare floors at Uby and Blackmoor for dressing the slags and slimes—of which they had reason to anticipate an abundant supply; those floors have been completed, and are now in active operation, employing upwards of 150 persons. A steam-engine, with other necessary machinery, has been erected for pumping the water, raising the slags and slimes, and delivering the same at the respective floors. Convenient workshops have also been erected in the valley between the floors of Uby and Blackmoor; and the workshops, originally erected upon the hill for the mining operations, have been converted into two cottages, which are occupied by two of the workmen, whose residence upon the spot is desirable. A reverberatory furnace has also been erected at Charterhouse for reducing the slimes, and making them available. The two blast-furnaces for smelting the rough slags are worked by the steam-engine; and the whole of the smelting operations are carried on at the Charterhouse Works. For the erection and completion of these works, in order to enable the company vigorously to carry on the operations, the outlay has necessarily been expensive; but it is believed that the future returns will fully justify the same.

The accounts for the past year will be submitted, and it will be seen that the returns in lead during the present year amounts to 12011 19s. 11d., to the end of April. It may be desirable to intimate that upwards of 5001 of this sum has been realised during the first three months of this year, and the value of lead on hand ready for market is estimated at 7001. It will be seen that the balance against the company is 14431 6s. 8d. Property fees, with such a property now in a state of productiveness, this balance should be cleared off, as it is important that the profits should be divided in the shape of dividends. A call of 5s. per share will produce 13501, and the directors are of opinion that this call should be made. Since the last meeting, we have to lament the death of Henry Newcome, Esq., one of the directors. Mr. Thomas Short Wright has been chosen in his place.

The following statement of accounts was then submitted:—Expenditure 50931 19s. 4d.—By balance last meeting, 11981 13s. 1d.; receipts for lead sold, 12011 19s. 11d.; proceeds of call of 5s. per share, 12501 = 36501 13s.; balance against company, 14431 6s. 8d.

Mr. FISHER enquired if the works were done by contract?—The CHAIRMAN replied that they did all by contract that was possible.

A PROPRIETOR asked if there was any chance of a regular production of lead from the mine?—The CHAIRMAN said, they were clearing away the surface earth as fast as possible, and then they would begin to work straight forward, when he had no doubt the produce would amply repay the shareholders. As they went on, instead of clearing away, they only turned the ground over, so that the amount of slags they raised might be judged of, which he hoped would be sufficient for the amount of slimes. On the 1st June they would commence smelting the May produce.

After some further conversation, the report was adopted, and a vote of thanks passed to the chairman and directors, when the meeting separated.

## WEST WHEEL TREASURY MINING COMPANY.

At a meeting of adventurers, held at the mine, on the 17th inst., the statement of accounts was produced, showing—Labour cost for January, February, and March, 16261 1s. 1d.; merchants' bills, steam-whim, &c., 10091 9s. 6d.—26351 10s. 7d.—By sales of ore, 24611 12s. 1d.—leaving balance against the adventurers, 1781 18s. 6d.; add book in debt last account, 14821 19s. 7d.—16561 18s. 1d. due to pursuer.—In pursuance of resolution of 17th of March, for disposal of 28 shares, the pursuer was requested to transfer them to the purchasers—Messrs. Sandys, Vivian, and Co., 12 at 81. per share; and to T. Field, Esq., 16 at 71. 10s. 6d.—making 2161 8s. to be placed to credit of adventurers at next meeting. Mr. Grylls's letter, dated April 10, demanding a portion of the dues, having been read, the meeting expressed its surprise at the application, as the 70-inch engine was erected by resolution of the adventurers solely on the promise held out to the committee by Mr. Grylls.

The following report, from Capt. W. Burgess and T. Richards, were read:—

**May 17.**—In reporting upon the present appearances and past expenditure, we think it proper to state that the statement of account before you this day contains 5001 above the regular working cost of the mine; for, in installing a steam-whim, besides additional pit-work for the 70-in. cylinder engine, including erections.

**Engine Lode.**—Burgess's engine-shaft is sinking below the 7



742. 1s. 8d.; to Mr. W. West, on account of steam-engine, 880l.—1099l. 1s. 8d.—Balance in hand last account, 457l. 0s. 9d.; received on sale of tin, 55l. 1s. 5d.; calls, 472l.—994l. 2s. 2d.; leaving balance against mine, 115l. 11s. 6d.—A call of 5s. per share was made.—It was resolved, that Mr. John Taylor be engaged as the superintendent of the mining operations, and that Messrs. H. T. Lee, W. Wilcox, and James Phipps, be added to the committee.—The meeting was well attended, and passed off with much satisfaction. It is expected that the shares will be in request, on account of the tone given to the proceedings, and the unanimous opinion that the mine will soon be classed among the first of tin mines.—The following report, from Capt. T. Hooper, was read:—

May 18.—In presenting my report, I shall endeavour to give you a detail of the proceedings at the mine. We are now in operation of casing and dividing down Morris's shaft, and putting in the footway by six men, in order to resume sinking as early as possible. The ground in the 10 fms. cross-cut was hard when I set last extent (6 feet), by six men, at 62. per fathom; but it is more favourable at present, and I anticipate the remainder will be explored for 67. per fathom; and, from the appearance at present, the anticipated point will be reached in the course of 12 weeks, where I expect to discover a large deposit of tin, by which the adventurers will be amply rewarded for the outlay. The cross-cut is driven from Morris's shaft about 2 fms., and according to the present underlay of the lode in the adit level, we have about 13 fathoms more to drive. The engine continues to work well, consuming about 6 cwt. of coal in 24 hours, going about five strokes per minute. I would propose to enlarge the pit at the 10 fm. level, as it is small at present. The cost will be about 3l.

#### CAMBORNE CONSOLS MINING COMPANY.

A special general meeting of shareholders was held at the offices, New Bridge-street, on Thursday last. We were pleased to find that the best spirit prevailed amongst the proprietors, and that the reports of the prospects of the mines by Capt. Matthew Francis, and Mr. F. Daniell, the resident manager, were most encouraging. The reports themselves, and the proceedings of the meeting, are so voluminous, that we are obliged to defer their publication till next week. In the meantime, we may state that the proprietors separated with a determination to adopt the most effectual and energetic measures for developing this valuable piece of mining ground.

#### KIRKCOBRIGHTSHIRE MINING COMPANY.

The quarterly meeting of adventurers was held, at the offices, on the 14th inst., when a statement of accounts was presented, showing—Balance in favour of mine, on the 12th Feb., 451l. 4s. 7d.; balance of sale of lead ore on the 1st March, 49l. 0s. 10d.; lead ore sold 8th March, 456l. 12s. 6d.; ditto 17th April, 451l. 9s.; ditto 25th April, 453l. 16s.—1862l. 2s. 11d.—February mine cost, 370l. 2s. 7d.; March ditto (including steam-engine, boiler, &c.), 874l. 6s. 1d.; April ditto, 49l. 1s. 8d.—1735l. 9s. 11d.; leaving balance in favour of mine, 126l. 13s.—The following report, from Capt. R. Williams and E. Bawden, was read to the meeting:—

May 11.—We again send you our quarterly report of this mine. Our principal work for the quarter has been in extending the levels east and west through the mine, and improving the machinery for drawing water. We have driven the 62 fm. level through to Keith's shaft, and extended it on westward 20 fms.; we have also driven the 50 further west 12 fms. We now find that the ore ground extends east and west of Stewart's, in the 62 fm. level, about 55 fms., which is a very great improvement on the level above. Also the ore ground in the 50 fm. level, to the west of Keith's, extends to a length of 70 fms. There is a piece of dead ground between, of about 50 fms. in length, and in the whole about 125 fms. of ore ground in the 50 and 62 fm. levels. The 50 fm. level has been in unsettled ground, but the quarter, but we have occasionally good stone of ore in it again lately. The 62 and west is also very promising for ore at present, having just reached the ground. In Stewart's shaft, which we have commenced sinking again, there is a large kindly lode, with fine stones of ore through it. We have put on another crank, and a full set of rods to the new pumping wheel, and fixed a new drawing lift from the 50 to the 62 fm. level. We sunk the new shaft 7 1/2 fms., when we discovered so much water that we were compelled to stop it until we got a lift of pumps to sink it with; this arrived by the 4th, and which we have brought; but the shaft, which was attached by flat rods to the crusher wheel. We regret much that we have not been able to get a secure foundation for the engine-house. We have raised 131 tons of lead ore, and driven above 90 fms. of ground in the past quarter. Our objects at present are—to get the engine to work, sink Stewart's and the engine-shafts, and extend the 50 and 62 ends west as fast as possible.

#### LELANT CONSOLS MINING COMPANY.

A general meeting of shareholders was held at the mine, on the 14th inst., when the accounts were presented, showing balance of 863l. 18s. 8d. against the mine.—A call of 2l. per share was made.

The following report was read to the meeting:—

May 14.—At the south mine, the 50 fm. level is this day holed to Rodd's shaft, where we have a lode 15 inches wide, worth 6l. per fm. The lode in Rodd's shaft, sinking below the 40, is 2 feet wide, worth 4l. per fm. This shaft being communicated to the 50 fathom level will place us in a position to raise more tin, and we calculate upon a productive level in driving west of Rodd's shaft. The other levels have not discovered so much tin as we could have reasonably expected; and, being in full hopes of a good reward for the outlay upon Wheel Margaret lodes, when the water is exhausted to the 60 or 70 fm. levels, we have ventured to abandon some of our outwork operations in the south mine.—Wheel Margaret Lodes: In forking this mine to the 36 fm. level we have found the backs of the 16, 25, and 36 fm. levels mostly dry; but the shaft, which was attached by flat rods to the crusher wheel, has been taken away by the former workers. In consequence of the old engine shaft being small, our progress has not been so rapid as it otherwise would have been; still we hope to see the bottom, or 85 fathom level, about the middle of August next, when it is highly probable that our quantity of tin will materially increase. We find tin in all the stuff drawn from underground, which will pay us for dressing it. We are driving a 16 fm. level cross-cut south of May's dip shaft to cut the south lode, and the granite rock is most congenial for tin lodes.

#### TREVISKEY AND BARRIER MINING COMPANY.

The usual two-monthly meeting of shareholders was held on Monday, the 20th inst., when the following accounts were presented:—

TREVISKEY.			
On account of ore sold Jan. 24 (less dues)	£3375	8	4
Wheat Selton adventurers for materials	66	11	0
Deduct—Labour cost February and March	288	3	1
Tribute of ore	289	1	3
Merchants' bills, &c.	292	5	1
Treasure adventurers, &c.	201	13	7
Income tax	17	12	10
Leaving profit of	£1853	4	5
B. balance in hand end of Jan.	92	4	1
Total	£1945	8	6
Deduct dividend of 16l. per share	1920	0	0
Leaving balance in hand of	£25	8	6
BARRIER.			
Amount of ore sold Jan. 24 (less dues)	£7	14	0
Deduct—Tribute of ore February and March	£5	11	1
Treasure adventurers, &c.	0	16	3
Income tax	0	13	9
Leaving profit of	£0	12	11
Due to pursers end of January	£64	3	6
Now due to the pursers	£63	10	7

The following report, from Capt. J. Jennings, was read to the meeting:—

May 10.—The 32 fm. level is driven 9 fms. east of Michael's shaft; the lode is 1 foot big, unproductive; the lode in the 272, west of Michael's, is also 1 ft. big, unproductive. The lode in the 240 east is still unproductive. The lode in the 248 is 2 ft. wide, yielding 3 tons of ore per fm.; this end is 73 fms. east of the shaft. The lode in the 236 is 2 feet wide, producing from 4 to 5 tons of ore per fm.; this end is 62 fms. east of the shaft. The lode in the winze sinking below the 236 is 1 foot big, producing 1 ton of ore per fm. The 224 is 38 fms. east of the shaft; the lode in this place is small; the winze below this level is communicated to the 236. The 200 fm. level is 40 fms. east of the shaft, and still unproductive. The 200 fm. level of the 236 are set on tribute. We are still driving the 40 fm. level, south of Williams's old shaft, and expect to intersect the south lode about the middle of next month. We sampled 511 tons of ore on Wednesday, and expect to raise 500 tons for May and June.

#### WEST UNITED HILLS MINING COMPANY.

At a meeting of adventurers, held on Wednesday, the 15th inst.—F. W. CAMPBELL, Esq., in the chair,—the accounts, having been examined and allowed it was resolved, that all adventurers in arrears of costs be sued, either by merchants or in the Stannaries Court, or both, in the most summary manner, at the discretion of the pursers.—The agreement of reference, entered into by the pursers with Mr. Ellery, meeting the approval of the adventurers, was sanctioned and adopted, and the pursers requested to carry it through without delay; or, failing that, to take the most immediate legal steps to compel Mr. Ellery to pay up his balance due to the adventurers.—The shares in the mine, now only 22s. are to be considered increased to 1110.—The steam-engine is to be forthwith erected, and the mine to be efficiently worked, for which purposes, and for paying arrears due from the adventurers to merchants and others, a call of 10s. per share was made.—The pursers were authorised to accept for the company a transfer of shares from any shareholder on payment of such portion of his calls as may be deemed advisable, and afterwards to sell and transfer such shares for the general benefit of the company.

#### WEST WHEEL VIRGIN MINING COMPANY.

A meeting of adventurers was held at the offices, Winchester-buildings, on Wednesday, the 13th inst., when (all the shares having been allotted) it was determined to work the sett with vigour, and to commence operations immediately. The report of the agent (Mr. Thomas Carthew) was read and approved; and, after various resolutions had been passed relative to the future management of the mine, the adventurers separated, highly gratified at their prospects of success.

#### WHEEL VENTON MINING COMPANY.

A meeting of adventurers was held at the offices, George-yard, Lombard-street, on Thursday, the 23d inst., when a call of 1l. per share was made. The rules and regulations of the company were adopted, and resolutions that the mine be worked independent of Buttersett, and that the question of the steam-engine be left for the decision of the committee were passed.

#### WHEEL OWLES MINING COMPANY.

At a meeting of adventurers, held at the mine, on the 17th inst., the statement of accounts for the three months ending March, was presented, showing—Tin sold, 3211l. 1s.; deduction from tributers' costs, 246l. 13s. 4d.; received for leavings, tin, &c., 31l. 12s.—3489l. 6s. 4d.—Mine costs, including returning charges, 1698l. 12s.; adventure with tributers, 194l. 10s. 7d.; carriage, 105l. 2s. 4d.; lords' and bonders' dues, 56l. 4s. 8d.; merchants' bills (including coals), 688l. 10s. 10d.; balance against adventurers at last account, 661l. 1s. 8d.—leaves balance now in favour of adventurers, 754l. 4s. 8d.

#### MINING NOTABILIA.

[EXTRACTS FROM OUR CORRESPONDENCE.]

COMBLAWN.—It has been definitely arranged that the steam-engine, late at Wheel Martha, purchased for the use of this mine, and erected under the superintendence of Messrs. Hocking and Loam, engineers, shall be put to work on Monday next, the 27th inst. It is erected over the old shaft, supposed to be sunk to 30 fms., and by means of flat-rods to the lower shaft (sunk 20 fms. by the present adventurers), will effectually drain the mine to a considerable depth. We learn that the pursers, H. T. Smith, Esq., of Devonport, visited the mine on Monday last, accompanied by Lord Ashburton (the lord), who was well pleased with the manner in which the works, so far, have been performed. Mr. Adam Murray, jun., it is expected, will be present at the opening, as the representative of the London adventurers.

CARVANEL MINE, GWENNAF.—This mine is divided into 132 shares, on each of which 12l. paid—present price 40l. per share, very few sellers. It gives me great pleasure to be able to announce to you, that within the last week a very important discovery has been made here. The men in sinking the engine-shaft have cut a rich course of copper ore, about 1 ft. wide. There is also a good lode in the adit. I am glad both on account of the adventurers and labourers; but more particularly for that intrepid adventurer, Mr. J. Lyle, who holds largely.

NORTH WHEEL VOR.—I find that the mine agents in the neighbourhood of Camborne have directed their attention to this highly promising sett. I saw one of them last evening at Carn Brea, who stated that he had a good opinion of the mine, which he has inspected. It is particularly a stanniferous locality, but there are at least, I find, two copper lodes running through the sett.

SOUTH UNITED (PERRANWILL).—I have lately seen the manager of this mine, who showed me some of the tin taken from the old men's burrows, the most of which he informed me he found in the hedges hard by. I suppose that little has been done here within hundreds of years. Mining is still very brisk in Cornwall, but the drop in the price of tin has put a little damping effect on the minds of speculators, yet there is no ground for fear.

SILVER-LEAD ORE.—A rich mine of silver-lead ore has lately been found on the property of A. J. Gulston, Esq., Llynwberllan, in the neighbourhood of Llandilo. This is believed to be an indication of a rich vein of silver-lead ore in the locality; and it is rumoured that an influential company is likely to undertake the working of the mine, and commence operations forthwith.

[From the Plymouth Journal.]

TAIVESTOCK CONSOLS.—It will, we are certain, be interesting to all our mining friends to learn, that a strong company is being formed to work these mines—the champion lodes in which are so highly spoken of. We are informed that the intention is to erect a steam-engine, and to sink the present engine-shaft from the 44 fm. level (its present depth) to the 60, then to drive eastward on its course under the large gossan, and to cross-cut south to intersect the two large gossan lodes. We understand that one-third part of the undertaking is already subscribed for by parties in this locality.

WARRLEGGAN CONSOLS.—The trial shaft has fortunately intersected the lodes at the junction, about 10 fms. under the surface, and it is quite clear that an old adit must have gone up beyond this place, as the bottom of the shaft, which is sunk at 124. 6d. per fm., is quite dry. Very good tin has been met with in this lode, which is from 18 to 20 in. wide; the matrix of the lode is very fine. On the north lode a fine arch of tin (left by the ancients) has been met with. There are no less than four adit levels driven on the course of the lodes by the old men. The works are going on very well, the weather having been much in our favour.

BIRCH TON AND VITIFER.—The lode in the 20 fm. level, west of Dunstan's shaft, is still small, but is producing good work; the ground is good for driving, and we shall soon see the junction of the lode. We have a good leader of tin in the old engine-shaft, and the ground is very favourable for sinking. We shall reach the 20 fm. level by the time mentioned in our last report. There is no alteration in the other parts of the mine.

COMPANY OF COPPER MINERS IN ENGLAND.—The bill for the resuscitation of this company, which has been read a second time, goes into committee on Monday next, in the House of Commons; and there is no doubt but the equitable propositions put forward by the shareholders' committee will be received, so that all legal difficulties being obviated, the company may return to their wonted activity and industry.

Mr. Jhu Hitchens has this morning left England for Lake Superior. We understand that the valuable services of Mr. Hitchens have been secured by a company, who have commissioned him to make a survey of some mineral property they have obtained in Micah Bay.

HISTORICAL NOTICES OF TALYBONT, CARDIGANSHIRE.—Sir Hugh Middleton, before the year 1608, when he commenced his great undertaking of supplying London with water, by bringing the New River from the Chadwell and Anwell Springs, in Hertfordshire, to the reservoir, at Islington, worked this mine, from the profits of which, with those of two others, he, in the space of five years, successively carried out that great project, by effecting what had been considered impossible, and by the sacrifice of a princely fortune at the shrine of public utility. Sir Hugh Middleton was succeeded by Thomas Bunsell, the friend of the great Lord Bacon, the father of inductive philosophy, under whose management the profits from this mine, and one or two others, rose superior to those of any former period, for in the short space of 11 years he amassed a fortune so enormous that, when the civil war broke out, he not only clothed the whole of King Charles's army, and relieved his necessities by a loan of 40,000l., but gave him the aid of all his miners, "converting (to use the words of Fuller, who records the fact) their mattocks into spears, and their shovels into shields, forming them into a regiment, which he commanded in person, in defence of a cause crown too desperate for recovery." From 1643 to 1660, Bunsell's management was successful; in one, dated 1649, is the following notice of Alty-crib, or, as it is commonly called, Talybont. He says that "in the mountains of Broomfield, Talybont, Goginan, &c., there were great quantities of silver and lead, and that he had bought those mines of Lady Middleton for 400l. down, and a like sum per annum during her interest therein." In another pamphlet, published in 1660, speaking of the same mine, he says—"If I could now command as much wealth as ever the Lydian Croesus did possess, I would gladly venture all in perforating these mountains." In the same publication is a letter from his true friend and servant, Thomas Broadway, relating an accident which happened in the Alty-crib Mine, in a level now called the Chapel adit. Thomas Broadway says—"Suffer my congratulations on your late success at Talybont to be admitted among the rest who represented the same to your imaginations, not so much for the historical report as for speculation on it, &c. Who hath therefore dreamt of a mine at Cwmymlog, or of the happy lot you drew out of the mountains of Goginan, Talybont, Broomfield, &c.?" In 1754, Mr. Lewis Morris, a man no less celebrated as an antiquary and poet than admirable for his very extensive acquaintance with the arts and sciences, was a superintendent of the King's mines in the neighbourhood, and drew up a historical description of the mining within the sphere of his jurisdiction, in which is the following notice of Alty-crib—"This was an ancient Roman mine; but a considerable quantity of ore has been raised here by a company from Shropshire, about 1740. The work has been wrought to a great depth, 80 yards deeper than the level" (meaning the Chapel level, which was the deepest at that time). "It stopped owing to the great feed of water, but mostly through the ignorance of the agents, and the company falling off by death, &c. The bottoms were very rich."

#### ACCIDENTS.

Explosion at Morfa Colliery, Talbach.—An explosion, which excited considerable alarm until the facts were known, took place at this colliery yesterday morning. From the particulars we have gleaned, it appeared that, whilst the men were at work, a fall of earth took place, which extinguished the Davy lamp. This led to an explosion, by which six men were burnt, but we are happy to find, not seriously. One poor fellow, however, had his back broken by the fall.—*Cardigan Advertiser*.

Merthyr.—W. Richards was killed in one of the Plymouth pits by a fall of rubbish.

Oldham.—G. Ashworth was killed by an explosion of fire-damp in Rhode Bank Pit. It appeared by evidence at the inquest, that no blame was to be attached to the proprietors of the pit, or to the underlooker; but the accident was "wing to the want of proper caution on the part of the deceased."

Leeds Mines.—As J. Pascoe, a mason, was following his employee, he was suddenly seized with a fit of coughing, and directly afterwards brought up a large quantity of blood. A companion went to his assistance, but the poor fellow had only just time to say that "he should not be long before he expired."

Dudley.—A boy, named Buncie, engaged as "hanger-on" down a pit connected with Scott's Green Colliery, had a miraculous escape from a frightful death. It appears the usual signal was given to the engine-man to hoist a loaded skip out of the pit, which was stated to be 120 yards deep, when the chain called the "tacklers" accidentally caught the lad's thumb, by which he was safely brought out of the pit, without sustaining further injury than to the thumb in question, which was somewhat contused by the pressure of the chain. The occurrence produced no small degree of excitement and surprise among those on the pit bank.—*Waterhampton Chronicle*.

Bolton.—W. Martin was killed by an explosion of fire-damp at Smith Fold Colliery, Little Hulton, belonging to Messrs. Harrop and Co. The poor fellow had been working all night, and about four o'clock incautiously went into another working, to get some refreshment, when his candle ignited some accumulated fire-damp, and caused the explosion. A companion was also sadly injured. The accident was not known until the men went to work—the engineer being absent.

YORK, NEWCASTLE, AND BERWICK RAILWAY.—The directors intend opening the great bridge over the Tweed at Berwick in June, all that is now necessary to complete it being the laying of the rails for the trains.

GLoucester and DEAN RAILWAY.—The works upon this line are proceeding with vigour, in order to have it ready for opening simultaneously with the South Wales line. It is proposed to convert the Monmouthshire Railway into a locomotive line, which will furnish another important mineral and passenger feeder to the South Wales and Forest of Dean lines.

MIDLAND RAILWAY.—This company are about to contract for working their Leeds and Bradford and Bristol and Birmingham lines.

OXFORD, WORCESTER, AND WOLVERHAMPTON.—Mr. Brunel, the engineer of this company, is understood to have submitted to the directors a guaranteed estimate of the cost of constructing the entire line within 20 months, at less than 20,000l. per mile.

#### LATEST CURRENT PRICES OF METALS.

LONDON, MAY 24, 1850.

ENGLISH IRON, &c.		TIN.	
Bar, bolt, square, London	2 6 5 7 6	Old copper	8 1/2 0 0
Nail rods	2 6 6 5	Yellow Metal Sheathing	8 1/2 0
Hoops	2 6 7 10	FOREIGN COPPER, f	
Shoats (single)	2 6 8 8	Chili	90 0 0
Bars, at Cardiff & Newport	2 6 8 15	ENGLISH LEAD, g	
Refined metal, Wales	2 6 9 3	Pig	18 5-18 10
Do. anthracite	3 10 3	Sheet	19 5-19 10
Pigs in Wales	3 0 3 15	Pipe	19 0 0
Do. do. forge	2 10 3 0	Red lead	19 10 0
Do. No. 1, Clyde	2 4 6 3 0	White ditto	20 0 0
Blewitt's Patent Refined Iron	3 10 0	Patent shot	21 0 0
for bars, rails, &c., free on board at Newport	3 10 0	FOREIGN LEAD, h	
Do. do. for tin-plates, boiler plates, &c., ditto	4 10 0	Spanish, in bond	17 10-17 15
Stirling's Patent 7 in Glasgow	2 13 0	ENGLISH TIN, i	
Toughened Pigs in Wales	3 0 3 10	Block	3 17 0
Staffordshire bars, at the works	5 10 6 0	Bar	3 18 0
Pigs, in Staffordshire	4 15 5 0	Refined	4 5 0
Rails	4 0 0	FOREIGN TIN, j	
Chairs	4 0 0	Banca, H. C.	3 12 0
Swedish	12 0-12 5	Ditto, for Export only	3 12 0
CCND	12 0-12 5	Strait	3 10-3 11
PSI	12 0-12 5	TIN-PLATE, k	
Gouffier	12 0-12 5	IC Coke	1 6 6-1 7
Archangel	12 0-12 5	IC Charcoal	1 11-1 13
FOREIGN STEEL, c		IX ditto	1 18 0
Swedish keg	13 15-14 10	SPELTER, m	
Ditto faggot	14 5-15 0	Plates, warehoused	per ton 14 15-15 0
ENGLISH COPPER, d		Ditto, to arrive	15 0 0
Sheet, sheathing, & bolts, p. lb.	0 10 10	ENGL. SHEET	per ton 21 0 0
Tough cake	per ton 88 10 0	QUICKSILVER	per lb. 4s.

REMARKS.—The Scotch pig-iron market has shown some activity to-day; and there are buyers to a large extent at 1s. per ton above the early part of the week.

LIVERPOOL, MAY 22.—In manufactured iron of all descriptions the market is dull, and prices remain the same as last noticed. For Welsh bars the demand has been somewhat more active, but without affecting prices. In pig-iron we have to notice the realization of our anticipations of last week. The speculative feeling having suddenly disappeared, and the accounts from America (our only foreign market now) being unusually dull, we cannot see anything whatever to support the market. Sales have within the last day or two been made at 44s.; but, at this figure, buyers are very shy, and await lower prices still—and will not, we think, have to wait long. In tin-plates the demand is rather slack, though the price remains firm.

#### MESSINA SULPHUR TRADE.

The accounts from Messina, of the 3d inst., gives the following account of the sulphur trade:—"The prices for readily disposable goods have remained firm. Besides, as but extremely little came in for sale, the demand continued, and the few holders maintained their demands; this is especially the case for deliveries until the end of July and August, whereas, for deliveries in the autumn and winter, a marked difference shows itself. Some business took place in the second best quality, to deliver at Terranova (one of the most important sulphur ports), to be delivered from October to January, 1851, at 19l. (last prime cargo without duty with one-third cash down). The market quality costs 10 grani per canter more at Licata. The mines are meanwhile being closely worked; owners will be compelled to effect their sales for delivery with one-third or one-half cash down, and prices may, therefore, by-and-bye fall, although perhaps this year only slightly, as the labourers' pay, the transport, and the hire of the mines, now costs much more than in ordinary years; and the article, therefore, costs more, and holders will scarcely consent to sell at a loss, and as the consumption also largely increases, particularly in North America and Germany."

"Ready goods must now pay the same price as was reported six weeks since.—Prime, at Licata, 28 l.; 2d ditto, best, 27 l. 5 s.; 3d ditto, good, 26 l. 10 s.; 3d ditto, current, 25 l. 15 s.; 3d ditto, best, 24 l., inclusive of duty, exclusive of duty 23 per cent. commission and sensario."

"Freights remain low, particularly since the repeal of the Navigation Act in England has opened shipments to every flag. In 1849 there were shipped to—

England		North America	
France	593,329	Italy and Austria	37,718
Holland and Belgium	266,287	Portugal	17,190
Prussia and Hamburg	44,019	Spain	4,500
Russia	60,250		2,000
Total	1,062,196		

In consequence of the political disturbances, far less than before went to France. On the 1st Jan., the following stock existed at the shipping places:—

Licata		Terranova	
Girgenti	75,000	Siciliana	3,000
Catania	125,000		18,000
Total	204,446	Palermo	5,000

Which, at present, are almost all shipped; whereas about 275,350 cantars lie ready in the mines, which, by degrees, will be brought to the coast as fast as the means of conveyance will permit."

#### New Patents.

##### SPECIFICATION ENROLLED DURING THE PAST WEEK.

GEORGE EDMOND DONISTHORPE, Leeds, and JAMES MILNE, Bradford, York: For improvements in apparatus for stopping steam-engines, and other first movers. The object of this invention is to enable the superintendent of machinery, situated at a distance from the steam-engine, or other first mover, to stop its action and momentum instantaneously, when required, without the necessity of communicating with the engineer. For this purpose the patentees propose to employ, in low-pressure engines, a pipe which opens into the condenser at bottom, and communicates with the atmosphere at top. This pipe is opened and closed by means of a cock, placed in the upper part of it, on the spindle of which there is affixed a weighted lever. When the pipe is closed, and a vacuum established in the condenser for the working of the engine, the weighted end of the lever is supported in a horizontal line by a sliding plate on which the weight rests. The other end of the sliding plate is attached to a bell crank lever to which wires are connected, which are carried into the different apartments, where the machines are placed, and there provided with pulleys; so that when it is required suddenly to stop the engine, a person watching the machine will only have to move the pulley near him, which will cause the sliding plate to be withdrawn from under the weighted end of the lever, which will then fall down into a vertical position, and opens the condenser to the atmosphere, whereby the vacuum will be destroyed and the machine instantly stopped. To prevent the engine being stopped without occasion or from wantonness, and to lead to the detection of the party doing so, there is a ratchet wheel, affixed upon the spindle of each pulley, into which takes a spring click, whereby the pull will be prevented from returning to its first position until the click has been removed from the teeth. The ratchet wheel and spring click are enclosed in a box or case, to which the foreman of the establishment only can have access. The steam pipe is furnished with a valve, the spindle of which passes through a stuffing box outside the pipe, and is attached to one end of a weighted lever which oscillates on a pin, and is furnished at the other end with a socket whereby it may be connected to a standard by means of a pin and projecting piece, so as to keep the lever down and the valve up to allow of the free passage of the steam to the cylinder. This projecting piece is attached to one end of a bell crank lever, the other end of which is furnished with links through which a second lever passes, having a balance weight at one end, and being connected by the other to the spindle of a valve which closes a tube opening into the condenser. The balance on the lever is so adjusted that the pressure upon the valve of the atmosphere against the vacuum in the condenser shall maintain the lever in a horizontal line; but when the pressure on both sides of the valve is equalized by the destruction of the vacuum, as was before explained, then the balance weight on the one end of the second lever will act (drawing it down), and withdraw the projecting piece on the bell crank lever, whereby the socket of the first lever will be set free, and will rise and consequently close the valve in the steam inlet pipe so as to cut off the steam from the cylinder. In the case of high-pressure engines, the apparatus in combination with the condenser is, of course, dispensed with, and the wires are connected directly to the bell



## Current Prices of Stocks, Shares, &amp; Metals.

STOCK EXCHANGE, Saturday morning Eleven o'clock.	
Bank Stock, 5 per Cent., 207 1/2	Belgian, 4 1/2 per Cent., 100
3 per Cent. Reduced Ann., 94 1/2	Dutch, 2 1/2 per Cent., 56 1/2
3 per Cent. Consols Ann., 95 1/2	Brazilian, 5 per Cent., 87 1/2
3 1/2 per Cent. Ann., 96 1/2	Chilian, 5 per Cent., 98 1/2
Long Annuities, 8 1/2	Mexican 5 per Cent., ex Coup., 31 1/2
India Stock, 10 1/2 per Cent., 267	Russian, 4 1/2 per Cent., 94 1/2
3 per Cent. Con. for 12th June 95 1/2	Spanish, 5 per Cent., 17 1/2
Escheq. Bills, 1000l., 14d. 7 1/2 p.m.	Doitto 3 per Cent., 37 1/2

**MINES.**—The mining share market continues much the same as noticed last week; but there is every reason to hope for an early improvement. There are inquiries for Devon Great Consols, Wheal Margaret, South Frances, and other of our leading mines.

In Wheal Golden shares, there have been several transactions at our present quotations, and the prospects are considered highly encouraging. The directors of the Devon Great Consols Mining Company, at the weekly board, held yesterday, declared a dividend of 9216l., being 9l. per share, from profits arising from sales of copper ores raised in January and February, after payment of which there remains in hand a balance of 20,409l. 16s. 10d., consisting of cash, ore bills not at maturity, and Exchequer bills, applicable to the general purposes of the company.

The usual bi-monthly meeting of Treviskey and Barrier adventurers was held on Monday last, when the statement of accounts presented showed a profit, on Treviskey, of 1853l. 4s. 5d. for the two months. A dividend of 16l. per share was declared, leaving to credit of next account 25l. 8s. 6d., with the ore bills coming due: 511 tons of copper ore were sampled on the 15th, and about the same is expected for May and June.

At a meeting of adventurers in Great Work Mine, the quarterly statement of accounts for January, February, and March, was presented, showing—Balance, end of December, 392l. 6s. 8d.; ores sold, 3565l. 4s.; sale of materials, 157l. 6s. 2d.—4114l. 16s. 10d.—To costs, lords' dues, &c., 2585l. 2s.—A dividend of 10l. per share was declared: leaving balance in favour of adventurers, 339l. 14s. 10d.

At Lelant Consols meeting, the accounts for the three months, ending March, showed a balance of 868l. 18s. 8d. against the mine, to discharge which a call of 2l. per share was made. The new engine is at work, and every preparation is being made to extend several levels towards some interesting points. Before the next meeting it is expected that some important discoveries will be made.

At a special general meeting of adventurers in Camborne Consols, held on Thursday, arrangements were entered into for raising additional capital, for the purpose of erecting a steam-engine, and more fully developing this important mining set.

At a meeting of West United Hills adventurers, after passing the accounts, it was resolved, that the engine be forthwith erected; that the mine be efficiently worked; and that the shares be increased from 222 to 1110—on which number a call of 10s. per share was made.

At the South Toller meeting, held on Wednesday last, the accounts were presented, showing—Balance last account, 505l. 12s. 6d.; ores sold, less dues, 2256l. 9s. 2d.—2762l. 1s. 8d.—To costs and merchants' bills for March and April, 1355l. 5s. 1d.; leaving balance in hand, 1406l. 18s. 7d. It is expected that a dividend of 2l. 10s. per share will be declared on the 31st instant.

The usual two-monthly meeting of Wheal Buller adventurers took place on Tuesday last, when the accounts were presented, showing—Balance from the last account, 497l. 4s.; ores sold (less dues), 3103l. 2s. 11d.—3601l. 6s. 11d.—To costs and merchants' bills for March and April, 772l. 9s. 2d.—A dividend of 20l. per share was declared: leaving balance in favour of adventurers, 268l. 17s. 9d.

At the Rannaford Coombe meeting, the accounts showed a balance against the mine of 115l. 11s. 6d. A call of 5s. per share was made. The shareholders were in high spirits from their represented good prospects, and in having secured the services of Mr. John Taylor, to superintend the operations at the mine.

At the quarterly meeting of Wheal Owles adventurers, the statement of accounts showed a balance in favour of the company of 75l. 4s. 8d., whilst at the former account the sum of 661l. 1s. 3d. stood against the mine.

At Devon and Courtney general meeting, a call of 10s. per share was made—the balance against the mine being 246l. 15s. 10d. When the ore bill for March ore is paid, and April ore sold, and the present call received, the mine will be in a more favourable position.

Mendip Hills annual meeting was held yesterday, when a call of 5s. per share was made—the particulars appear in another column.

At the quarterly meeting of Kirkcubrightish adventurers, the accounts showed balance in favour of mine, 136l. 13s. The report stated that 131 tons of ore had been raised, and 90 fathoms of ground driven in the quarter.

Shares in the following mines have changed hands since our last:—Devon Great Consols, South Toller, Condurrow, Grambler and St. Aubyn, Herodfoot, Tincroft, Bedford United, Heignton Downs, Trethvey (copper), Daren, Mary Ann, Tremayne, Alfred Consols, Wheal Longmaid, South Plain Wood, Moditham Consols, Trehane, Penance Consols, Wheal Golden, Stray Park, Treviskey and Barrier, West Wheal Treasury, Wheal Franco, West Polgoth, Drake Walls, &c.

In Foreign Mines, there have not been many transactions; some business however, has been done in Imperial Brazilian, St. John del Rey, National Brazilian, Santiago, Cobre, Linares, &c.

Despatches have been received from the Imperial Brazilian Mines to the 3d March, and a remittance of 123 lbs. of gold. There is nothing of importance to notice, but the operations are going on satisfactorily.

The National Brazilian Mines advices are to March 5. The produce from Coques, from the 24th February to 5th March is—mks. 4 6 1 17. By the completion of a sink, they are enabled to make more progress towards a point where a large deposit of gold is anticipated.

The St. John del Rey letters are to the 9th of March, furnishing the returns for February, by which we find the produce to be 21,364 oitavas, from 4977 tons of ore, giving a profit for that month of 2754l. 16s. 9d. A remittance of 40,695 oit. was to have left the mines for Rio on the 12th. During the last 10 days of the month, a considerable improvement in the returns had taken place, which we learn continues up to date of despatch.

The Australian Mining Company have received their usual monthly report, advising the progress of the operations, and that the engine would, in all probability, commence working in April. The lode in the 50, north of Masterman's shaft, was producing 3 tons of ore per fm.; other points were looking very promising. The report states that 1500 tons of copper ore had been raised above the adit; and, with the assistance of the engine, they hoped their expectations would be realised in depth.

The accounts received by the Worthing Company, by the Overland Mail, may be considered very important. The reports by the company's professional agents are highly encouraging, but by far the most favourable intelligence received from Australia, relative to the geological features of that country in connection with mining prospects, is the discovery of a "flookan," about 1 foot wide, on the Worthing property, which, Captain Richards observes, has not yet assumed the appearance of a regular cross-course; but, if on exploration, this should turn out to be the case, it will be the first cross-course discovered in Australia of which we are aware, and is calculated to have a very beneficial influence on any lode it may intersect.

**THE ELECTRIC LIGHT.**—We have reason to believe that one of the grandest discoveries of the age, in connection with electricity, has just been effected by Mr. Stait. Efforts are being made to secure a patent, with as little delay as possible,—when we shall be enabled to lay before our readers the particulars of the invention.

**LONDON AND NORTH-WESTERN RAILWAY.**—As the half-year draws towards a close, considerable anxiety is naturally felt as to the amount of dividend which is likely to be paid by this, the largest of all railway companies. In order to enable our readers to form something like an opinion upon the subject, we think it desirable to lay the following facts before them. From the published weekly traffic returns of the company (which, by-the-by, excludes the traffic of various subsidiary lines), it appears that, up to the present time, the traffic of the half-year has exceeded that of the corresponding half of last year by, in round numbers, 50,400. And if we suppose the same ratio of increase to continue for the remainder of the half-year, we shall have a net increase of 65,000. This sum, added to the gross receipts of the corresponding half of last year, 1,063,000l., gives an income of 1,128,000l. Presuming the expenses to continue the same as last half-year (and we should think they are more likely to be less than more), viz., 628,000l., a balance will remain of 500,000l., or, with the balance from the last half-year of 68,000l., 568,000l., applicable to the payment of dividends. If there were no increase in the amount of capital beyond that upon which dividend was paid for the half-year ending on the 31st December last, it would require about 445,000l. to continue the payment of 5 per cent.; but supposing that, in consequence of the opening of the Buckinghamshire line and other works, an additional 20,000l. (and we do not believe it will be so much) should be required for dividends, the company will be enabled to declare a dividend at the rate of 5 per cent. per annum, and carry the handsome surplus of 123,000l. to the next account.

## PRICES OF MINING SHARES.

BRITISH MINES.				BRITISH MINES—continued.			
Shares.	Company.	Paid.	Price.	Shares.	Company.	Paid.	Price.
1000	Abergreskin	9	—	8000	South Tamar	1	23 1/2
1024	Alfred Consols	8 1/2	22 1/2	128	South Caradon	5	370
1024	Arundell	—	—	1100	South Doicath	5	3 1/2
1024	Asburton United Mines	9 1/2	—	256	St. Michael's Peak	5	10 1/2
1024	Balclutha	9	14	256	St. Michael's Wh. Ann	30	28 3/4
128	Balnoon Consols	42 1/2	50	1024	South Plain Wood	1	6 1/2
903	Barristown	5 1/2	3	300	South Speed	5	5
3650	Bawden	1	1 1/2	256	South Tolvus	16	140 1/2
6000	Bealbury	1	1	256	South Trelawny	28 1/2	5 1/2
4000	Bedford	3 1/2	4 1/2	3000	South Wales Mining Co.	1	1
1280	Birch Tor & Wither	10 1/2	6 1/2	256	South Wheal Bassett	10 1/2	240
5000	Black Craig & Craigton	—	—	124	South Wh. Frances	160	480
5000	Blamavon	50	12 1/2	256	South Wh. Josiah	2	3 1/2
5000	Blisland Consols	1	—	10000	Southern & Western, Irish	24	4
1024	Bodmin Consols	3	3 1/2	280	Spearne Moor	30	40
5000	Bodmin Moor Consols	1	3	138	Spearne Consols	10	60
60	Bosom	10	12 1/2	256	St. Aubyn and Grylls	24 1/2	3 1/2
100	Botallack	182	110	94	St. Ives Consols	—	80
120	Brewer	5	10 1/2	128	St. Michael Peak	5	10 1/2
10000	British Iron, New Regis.	12	2 1/2	992	St. Michael Consols	1	1
—	Doitto ditto, scrip.	10	10	1000	Stray Park	45	314 23
2400	Bryn-Arian	2	10 1/2	9600	Tamar Consols	3	4 1/2
107	Budnick Consols	52 1/2	10 1/2	1024	Tavistock Consols	1	4 1/2
260	Butterton	1	3 1/2	1024	Taty Consols	8 1/2	2 1/2
1000	Callington	22	5 1/2	6000	Tincroft	7	13 1/4
1000	Camborne Consols	7	5 1/2	38	Tokenbury	170	10
20000	Camborne's Steam Coal	7	5 1/2	240	Tolcarn	8	14
256	Caradon Mines	22 1/2	10	5000	Tregaron Consols	1	1
256	Caradon United	24 1/2	5 1/2	256	Trehardun	3 1/2	7 1/2
1536	Caradon Vale	3	—	256	Trelane	12	22 1/2
1000	Caradon	5	12 1/2	5000	Treleigh Consols	6	23 1/2
572	Caradon Wh. Hooper	5 1/2	4 1/2	200	Trellyn Consols	—	24
1000	Carn Brea	15	115 1/2	2000	Trenance	3	—
1000	Cartwheel Consols	13 1/2	7	1500	Trenauit Line Quarries	2	3
113	Charlestown	220	—	96	Treavevan	10	95
500	Chilblaw	2	4 1/2	120	Trethellan	3	18
128	Comfort	45	35	120	Treviskey and Barrier	130	225 3/4
256	Condurrow	20	90 100	512	Trevelyan Copper	2	2 1/2
2560	Cook's Kitchen	14	6	512	Treville (Lewannick)	4	7 1/2
1000	Coombe Valley Quarry	5	5 1/2	1000	Tyldwy	2	2 1/2
1000	Copper Bottom	7 1/2	—	200	United Mines	50	150 160
900	Court Grange	9	10	256	Wellington Mines	25	30
512	Cradock Moor	120	30	128	West Buller	10	500
128	Creeg Brava	120	30	256	West Caradon	20	90
500	Cusert Mine	124	—	512	West Fowey Consols	40	12
1000	Cwm Erbin	4	34 1/2	1024	West Park Consols	5	—
1000	Daren	2	7 1/2	2500	West Polgoth	5	7
7100	Derwent	10	3	—	Doitto Notes	3	4 1/2
502	Duonacourtney Con.	11 1/2	23 1/2	512	West Providence	9	20 1/2
1024	Devon Great Consols	1	34 1/2	200	West Seton	45	180
1000	Diurode	30	40 45	120	West Trelhelian	5	20
128	Dolcath	30	20	512	West Wheal Frances	13	10
2560	Drake Walls	24 1/2	24 1/2	256	West Wh. Friendship	9	8
10000	Durham County Coal	45	5	2845	West Wheal Jewel	12	23 1/2
3000	Dyringw	10	5	940	West Tolvus & Treloah	12	56 1/2
2500	East Birch Tor	3	3	1024	West Wheal Trevelyan	7	7 1/2
1024	East Buller	2	4 1/2	1024	West Wheal Virgin	4	—
2048	East Crowndale	74	18	1024	Whidson Mines	4 1/2	—
356	East Godolphin	10 1/2	18	5200	Wicklow Copper	3	14 1/2
4000	East Looe Lake Cons.	2	4 1/2	5000	Wicklow Copper and Sulphur Mines	3	34 1/2
128	East Pool	10	7 1/2	107	Wheal Adams	130	150
9000	East Tamar Consols	13	12 1/2	1000	Wheal Agar	—	60
256	East Tolvus	14	7	256	Wheal Albert	10	28 29
128	East Tywarthayle	1	3	240	Wheal Anderton	28	—
94	East Wheal Crofty	125	95	128	Wheal Ann	—	50 1/2
128	East Wheal Rose	50	510	512	Wheal Anna Maria	7	4
256	East Wheal Seton	24 1/2	24 1/2	120	Wheal Bal	14 1/2	22
—	East of Scotland Iron Co.	5	14	256	Wheal Benny	11 1/2	—
1280	Exastor Lles	3	4	1024	Wheal Bray	11 1/2	—
248	Exmoor Wh. Eliza	11	10 1/2	2424	Wheal Calstock	9	10
494	Fowey Consols	40	45	256	Wheal Carpenter	—	7 1/2
1024	Fredd Llwyllyd Mines	14	34	208	Wheal Courtney	20	23
256	Garras	41	23	182	Wheal Elizabeth	9	32
4000	Gen. Mining Co. for Iron	14	4	256	Wheal Fortescue	15	—
2500	Gowla Consols (Tin)	4	1 1/2	100	Wheal Friendly	70	66 1/2
256	Gouanema	44 1/2	16	764	Wheal Francis	27	10 1/2
128	Grampian	10	10	4000	Wheal Golden	2	5 1/2
256	Grampian & St. Aubyn	80	16 1/2	1000	Wheal Grose	38	5 1/2
96	Great Consols	1000	250	100	Wheal Henry	—	40
512	Great Wheal Badden	—	50	256	Wheal Kingston	2 1/2	14
512	Gr. Wh. Trough Tor Con.	24 1/2	20	6000	Wheal Langford	4	3
6000	Growa Slate Company	5	3	1024	Wheal Lawrence	3 1/2	3 1/2
1026	Gustavus Mines	3	3 1/2	112	Wheal Margaret	79	180
256	Hawkmor	132	70	512	Wheal Mary Ann	5	40 42
6500	Heignton Down Con.	24	3 1/2	4	Wheal May	—	—
1500	Hennock Silver-Lode	21 1/2	4 1/2	360	Wheal Oak	25 1/2	5
512	Hennock Iron & Tin	21 1/2	21 1/2	3000	Wheal Penhale	18	6
512	Herodfoot	16	14 1/2	210	Wheal Prospect	4	7
10000	Hilmarian	124	14	1024	Wheal Providence	1	2 1/2
1000	Holmbush	22	10	128	Wheal Reeth	11	75 80
1500	Kewick	10	2 1/2	1024	Wheal Saron	107	260
1024	Kingst and Bedford	1 1/2	4 1/2	1024	Wheal Sarah	5	6
787	Kirkcubrightish	5	5 1/2	512	Wheal Sophia	5 1/2	6
2018	Lanheroes Wh. Maria	92	5 1/2	128	Wheal Squire (St. Erth)	—	5
252	Lanarth Consols	—	7 1/2	128	Wheal St. Ann	30	35
256	Lelant Consols	47	25 26	1100	Wheal Trescoll	62	7
1000	Levant	—	175	256	Wheal Trelawny	72	92 93
1000	Lewis	17	94 10	256	Wh. Trevelyan (St. Ervan)	91	21
1000	Livymmales	9	10	1024	Wheal Trevelyan	—	19
3500	Lyvri	30	50	256	Wheal Trelawny	40	12
253	Lystowh Consols	1	1	512	Wheal Trelawny	18	14
6000	Mary Ann Valley	10	1	1000	Wheal Vincent	54	7
5000	Mendip Hills	34	2	128	Wheal Vioh (Perranz)	18	14
128	Metha	34	—	184	Wheal Vyvyan	—	60
20000	Mining Co. of Ireland	7	4 1/2	—	FOREIGN MINES.	—	—
1024	New East Crowndale	2	2 1/2	5000	Altan Mining Company	14 1/2	24 1/2
1024	North Buller	14	34 1/2	15000	Asturian Mining Co.	15	—
100	North Pool	49	450 475	20000	Australian	—	34 1/2
140	North Roskar	52	160	6000	Barossa Range	12	6 1/2
252	North Wh. Lez	2	2 1/2	10000	Brazilian Imperial	23	6 1/2
512	North Wheal Vor	—	24	12000	Cobre Copper Co.	40	36 38
128	Park Consols	552	650	10000	Copio Mining Co.	14	4 1/2
1026	Pendares Consols	2	5 1/2	20000	General Mining Ass'n.	20	13 1/2
1000	Pendarves & St. Aubyn	4	5 1/2	4000	Guadalupe	5	1
1248	Pengelly Tin	1	1	2000	Doitto Prefrential	24	2
5000	Pennant & Craigwen	24	2 1/2	3000	Kinzigtal Mining Ass.	2	2 1/2
1000	Pennybank and Ergold	4	5	5051	Mexican Company	594	—
1024	Penance Consols	32 1/2	34 1/2	30000	Mexican & South Amer.	8	1 1/2
512	Peter Tavy & Mary Tavy	4	1	10000	Mexican	3	3 1/2
5000	Plymouth Wh. Yeolam	61	—	104000	N. Br. Australasian	1	1
1000	Portland Cement	10	10	7000	Royal Santiago	10	124 134
30000	Rhyannor Iron	50	12	1000	St. John del Rey	15	144 145
10000	Ditto New	7	3	43174	United Mexican	Av.	244 64 64
5000	Roche Rock Tin	1	1	10000	Worthing (S. A.)	2	2
1024	Rannaford Coombe Tin	1	3 3/2				



## NOTICES TO CORRESPONDENTS.

\* We must impress upon our correspondents, the necessity of invariably furnishing us with their names and addresses—not that their communications should, consequently, be noticed, but as an earnest to us of their good faith.

**MINING IN IRELAND.**—We have received several letters alluding to alleged important discoveries, but which are written in so vague and general a style, as to compel us to withhold before inserting them. We should feel obliged if some of our correspondents would favour us with such particulars that we can publish.

\* (Ballinagarry).—The statements we publish of the sales of copper, tin, and lead, are depended upon as correct. Many sales are made by private bargain, the particulars of which do not reach us; but our returns comprehend the produce of nearly all the mines of any consequence in the country. The sales at Swansea are from the official Ticketing Paper. If our correspondents can help us to any information, we shall be glad to hear from him.

\* (M.). (North).—The date of the patent referred to was the 2d November last; it was entitled "For improvements in machinery for dressing, shaping, cutting, and drilling, or boring rocks or stone; parts of which improvements are, with certain modifications, applicable to machinery of apparatus for driving piles." Messrs. Newton, of Chancery-lane, were the agents.

\* (F.). (Callan).—The address of Mr. Leighton is, Cross Inn, Llandebon, near Llandilo.

\* (H.). (Leeds).—We know nothing whatever of the "Anglo-California Mining and Dredging Company," or of the parties concerned in its concoction. Great efforts appear to be making to get the shares taken up in different parts of the country, and by what we hear, the perseverance and alluring representations of their agents have been very successful, even in Yorkshire.

\* (B. W.). (Stafford).—The specification of Mr. R. Plant's improvements in the manufacture of iron was published in the *Mining Journal* of the 26th January last.

\* (A Shareholder). (Leeds) must first apply to the secretary at the office of the company, apprising him that, on being refused the information, he will publish the particulars in our Journal.

**CADRE MINTE.**—In the article which appeared last week a typographical error occurred; read "Bedford United" for "British United."

\* (A. B.). (Pencroise).—No work of the kind has been published, but we believe one is in course of preparation. Full notification of its appearance will be given in our Journal.

**IMPROVEMENTS IN WIRE ROPE.**—We shall publish a detailed description of Mr. J. B. Wilson's patent in our next Journal.

The communication of "A Reader," in reference to "the Racing Purser and W—L—," would, if inserted, subject us to an action for libel.

\* (R. W.). (Cornhill).—The matter had better now drop. In another column is published the reply of Mr. Murchison, which we presume will close the discussion, so far as the parties immediately interested are concerned; while it would be evidently unfair to allow an anonymous writer to further annoy by putting, it may be, a wrong construction on the words or actions of either.

**VARIATION OF THE MAGNETIC NEEDLE.**—Sir: Will you please to be kind enough to let me know, through the medium of your valuable paper, the variation of the magnetic needle, from the year 1820 to the present time? You will, by so doing, confer a great favour, not only on myself, but on many of your readers. A Viewer: *Durham, May 17.*

[The subject of the variation of the magnetic needle is one of the most complex in the whole range of physical science. The observations to be made and collected before we can entertain even a tolerably comprehensive view of the phenomenon are so very multitudinous, that success can only be looked for in a generalisation of those continued results which have been, and will be, furnished by the various magnetic observatories first founded at the suggestion of Humboldt, and now scattered so judiciously over the entire surface of the habitable globe. We will, however, direct the attention of our correspondent to a few of the salient features of this interesting problem, reserving to a future occasion the more comprehensive discussion of its details. In 1659 or 1660, the line of no variation passed through London. From this period it continued to pursue a progressive westerly direction to the year 1815, when it reached its maximum; viz.: 24° 27' 18"—since which time it has pursued a retrograde motion, as shown by the following results obtained by careful experimenters—the variation was:—

In 1816	24° 17' 9"	In 1823	24° 9' 40"
1820	24 11 7	1831	24 0 0

But though the direction of the line of no variation was westerly within the period named, it cannot be regarded as a seemingly anomalous that this very curve should have passed through Paris four or five years after it had made its appearance in London; for it was not till the year 1664\* that the magnetic corresponded with the meridian. In 1814 the westerly variation at Paris was 22° 34'; in 1829, according to Arago, it was 22° 12' 50". The dip has also been subject to similar changes, though in a less degree than the variation. The amount in London was—

In 1730	74° 42'	In 1805	70° 21'
1773	72 19	1818	70 34
1780	72	1821	70 3
1790	71 53	1828	69 47
1800	70 35	1830	69 38

The variation of the needle, in obedience to causes operating at different seasons of the year, and at different hours of the day, is a matter of great and increasing interest. Hansteen found that the dip during the summer was greater by about 15' than during the winter, and 4' or 5' greater in the forenoon than in the afternoon. The deviation of the horizontal needle from its mean position is greatest in the months of June and July, and least in December. It tends to be easily deflected from its mean position, reaching its greatest amount of deflection about eight o'clock. Returning then quickly to its mean position, which it reaches between nine and ten o'clock, it passes to the west, attains its maximum about one o'clock in the afternoon, and then slowly recedes to its mean position, at which it arrives at about ten o'clock at night. These various changes are considerably influenced by the state of the weather, and especially by alterations of temperature. Mr. Christie has shown that the terrestrial magnetic intensity is least between ten and eleven o'clock in the morning—the time, as he observes, when the sun is nearly on the magnetic meridian; from this time until nine or ten o'clock in the evening it increases, and then undergoes a diminution until it attains the minimum already referred to. In the year 1847 Mr. Barlow was led to undertake an extensive series of observations in connection with this subject, in consequence of some extraordinary disturbances which were occasionally manifested in the telegraph instruments of the Midland Railway. Mr. Barlow's experiments are detailed in the *Philosophical Magazine* for May, 1849. With very delicate galvanometers he ascertained that currents are at all times flowing through the telegraph wires to a greater or less extent, and when the wires are sufficiently long they may always be rendered visible. But it is necessary that they be furnished with earth connections, for without these no action takes place. The most curious fact elicited in these experiments is, that there is an electric current travelling in a certain direction along the telegraph wires from about eight A.M. to eight P.M., and returning in the opposite direction during the remaining hours of the twenty-four. The direction depends upon the relative position of the earth connections, and not upon the route followed by the wire, for this may be very circuitous, without influencing the result. In the magnetic observatory at Greenwich the variations of terrestrial magnetism are all registered by actinic power, and the greatest conceivable delicacy is observed in obtaining the results. It was found, in fact, that the approach of an observer was sufficient to produce a disturbance in the magnetic bars, and each of these is now, therefore, made to carry a small mirror, which reflects the light of a lamp upon a piece of photographic paper, by which arrangement each vibration of the needle is faithfully recorded for every minute of the 24 hours. In the erection of magnetic observatories, extreme caution is required in the selection of the bricks or stones which are employed, as these are found in many instances not only to influence the magnetic needle, but absolutely to acquire magnetic polarity. This circumstance has been generally referred to the ferruginous character of the stone, or the material of which the bricks are made; but we cannot help thinking, with regard to the latter, that it arises in some measure from the large quantities of sulphate of iron used by brickmakers for the purpose of colouring their bricks. There can be little doubt that some portion of this at least is reduced to a magnetic condition in the process of burning.]

\* 1669, according to Humboldt.

**SUSPENSION BRIDGES.**—Sir: In your "Notices to Correspondents," in last week's Journal, a serious mistake was committed, in reference to my last letter on Mr. Motley's suspension bridge, which I had the pleasure to correct. By referring to that letter it will be seen that it was not his plan of under-suspension bridge that I condemned; for I believe the principle to be as good, or better, than any other I have seen, his estimate of strain, &c., being all I have objected to, or attempted to prove was incorrect; nor was it so much to the principle of his "inflexible suspension," as he terms it, that the objection was raised, but it was from contemplating the danger that would inevitably attend the execution of the work in the manner he recommended that led to the idea that the most appropriate name for such a work would be the "Bridge to Kingdom Come."—An Enquirer: *THE NEXT GENERATION: Castle Street, May 23.*

[The insertion of this letter should, perhaps, supersede the publication of Mr. Motley's reply, but, wishing all parties to have an opportunity of a full explanation, we have appended it, in the hope that the discussion may now end.]

**SUSPENSION BRIDGES.—RISQUED FRIEND:** If your correspondent had confined himself to still maintaining his error, I should not have further noticed his communication; but as he has thought proper to insinuate that the under-suspension bridge is dangerous, by the vulgar saying that it is a character dangerous to human life; whereas I contend it is capable of being made more certain and stable than any other kind of bridge, not excepting a stone arch; for the abutments of a stone arch may give way. The suspension would not, in such a case, become dangerous, whilst the other would tumble down, and thus, probably, produce the catastrophe which your correspondent wishes to infer would be the case with the under-suspension. That any of your readers may test your correspondent's accuracy, let them take a piece of wood, say, 3 or 4 feet long, and 1 inch square; let each end rest upon a bearing point; then let them hang on the middle a weight sufficient to make it deflect an inch; then remove the same weight to half way towards either point of rest, and they will quickly discover the error your correspondent has made, and disprove his assertion—viz.: that the middle of a parallel beam is not the weakest point.

Now, although at issue with your correspondent on the subject of bridges, I quite agree with him and you on the subject of labour; with you, I think eight hours' close application to labour ought to be sufficient to enable a labouring man to exist comfortably; and I hope the time is coming when the labouring poor may be protected from the grinding influence of wealth—effected by law, both as regards time and minimum remuneration; and that education and correct moral instruction may be diffused more generally than is unhappily the case at present; by which means the demoralising and destructive influence of habits of drunkenness (the great curse of mankind) may be greatly diminished, and consequently increase the happiness of the human family.—THOMAS MOTLEY: *Slough, Lambeth, 5th mo., 20.*

**COMPOSITION OF THE BRONZE OF THE ANCIENTS.**—It appears from a number of experiments, that the bronze of which the ancients formed their weapons, and other articles, consisted of 88 parts of copper to 12 parts of tin; and it is remarkable that the same admixture of the metals has been employed in nations very remote from each other.

\* (A Secretary). (Broad-street).—Grown is the name given by Cornish miners to granite, and to rocks of the same structure.

\* (Chemists). (Liverpool).—Succinate acid is obtained by distilling coarsely powdered amber in a retort by itself, or mixed with one-twelfth of its weight of sulphuric acid, diluted with half its weight of water, with a heat gradually raised. The acid which sublimes is to be dissolved in hot water, to be saturated with potash or soda, boiled with bone-black, to remove the foul empyreumatic oily matter, filtered, and precipitated by nitrate of lead, to convert it into an insoluble succinate, which, being washed, is to be decomposed by the equivalent quantity of sulphuric acid. Pure succinate acid forms transparent prisms. The succinate of ammonia is a useful reagent for detecting and separating iron.

\* (An Agriculturist). (Aylesbury).—The London, the Plastic, and the Weald clays, which lime improves, are of a different geological age from the Oxford clay and its derivative soils, on which lime is often employed, without any sensible effect.

\* It is particularly requested that all communications may be addressed—  
TO THE EDITOR,  
*Mining Journal Office,*  
26, FLEET-STREET, LONDON.  
And Post-office orders made payable to Wm. Salmon Mansell, as acting for the proprietors.

THE MINING JOURNAL.  
Railway and Commercial Gazette.

LONDON, MAY 25, 1850.

The *MINING JOURNAL* is published at about Eleven o'clock on Saturday morning, at the office, 26, Fleet-street, and can be obtained, before Twelve, of all news agents, at the Royal Exchange, and other parts of London.

Continuing our observations of last week respecting the exemptions and liabilities in the winding-up of certain foreign companies, we have not assumed that their affairs must necessarily pass into Chancery. Our object is to satisfy, as far as we can, the desire of numerous correspondents to be apprised of their true position, many doubting that, as unregistered proprietors, they could be included in the list of contributories in the possible contingency of a winding-up. To dispel a delusion so evident to every one who has followed the course of decisions in the Masters' office, we have availed ourselves of a long-acquired knowledge of the affairs of one of those companies—the *ASTURIAN* (a fair specimen of the class)—to offer some general observations on a state of facts which, in the main features, will be found applicable to most of our Hybrid germinations from English money, and foreign projects. The *Asturian Mining Company* is based on what the all-powerful influence of British capital might, by thrift and honesty, have made a sound and profitable speculation. As it is, there can be no room for a second opinion, that the contrary principles have influenced the management of the concern; the power which should have controlled the directive officers was too apathetic or timid, if not too servile, to strike at the root of evil, and discharge such of the directors as were proved unfaithful or incompetent; and the natural consequence is, as in all similar cases, that the fears of our correspondents may be realised from day to day. They must either hand over their property to the first adventurers who may offer them terms, whether advantageous or the contrary, or else seek the protection of the Court of Chancery. Therefore, it is a matter of importance for our readers to be informed where their liability begins and where it ceases, which we proceed to demonstrate.

The property being of a certain value, admittedly from 70,000L. to 100,000L., it is reasonable to assume that, if it be protected in the way the Court of Chancery alone knows how to protect, it will be sold for no inconsiderable sum; and whatever advances may be required in the shape of contribution, may be restored on the division of the funds. The parties who, as actual holders of the shares of the company, are the nominal partners, are also those primarily bound to make those advances, and entitled to the proportionate reimbursement when funds are realised. Failing to procure sufficient means from the nominal partners, there are others to whom the Master may apply for that purpose—and that on the principle, that although not actually members, their credit has been expressly, or impliedly, pledged to the satisfaction of the company's contracts, in part or in toto. Our present opinions cannot be expected to bear with them the authority of a legal essay; but we have taken considerable pains to arrive at correct views, and we think that the following enumeration of the several classes liable to be included in the list of contributories will not be far short of a fair estimate:—

1. All actual holders of registered or unregistered shares to whom the original issue can be traced.
2. All transferees who have committed themselves by any act of proprietorship. The innumerable instances of the mode whereby a transferee may be thus compromised, prevent our entering into details. However, there is no rational man who is not competent to decide for himself what may constitute an act of ownership by conscientiously answering the following query:—Have I done any act which, as between man and man, represents me as the owner of shares in such and such a company?
3. Holders who have done any act to represent themselves beneficially interested, although others may be the nominal partners.—In this category may be named parties with whom shares have been deposited on mortgage, or by way of security.
4. Those who have transferred their shares, but whose transferee has not been admitted as a substitute by the usual forms which imply an acceptance, according to the regulations which govern the partners *inter se*. This condition involves the necessity of the retiring partners enforcing the performance by his transferee of the first obligations attached to the shares, which may amount to an acceptance of the transfer.
5. All transferees are liable for contracts entered into prior to the transfer of their shares; and it may be a question in those companies not specially regulated by statutes, and thereby left solely under the influence of the common law, how far the original holders are answerable for the insolvency, repudiation, or failure to contribute on the part of their transferees, until there is an actual dissolution.
6. The personal representatives or others taking the beneficial interest in the shares under the administration of the estate of a deceased shareholder.
7. Every person who may have ceased to be a member under circumstances of fraudulent representations as to the shares assigned, surrendered, or forfeited, or their personal representatives.

Moreover, there are two apparently insignificant words in the clause of the Winding-up Act (1848), defining the term "contributory," which are characteristic of the hastiness, or, as some will have it, slovenliness, of our modern legislation. These are "otherwise, however." After giving an almost unbounded range of application in express language, they are added to remove any limit which might justify a defined opinion as to exemption. Independently of the foregoing list of those chargeable with contribution, contact with the shares, or meddling in the affairs, however foreign to an intention to become a partner, may establish a ground upon which it may be alleged that an ostensible connection with a company presumptively arises. Such a laxity of law is very reprehensible; and in concluding this topic, we may be permitted to express a hope that the Legislature will take an early opportunity to contract this prolific source of doubt. For if the present latitude is continued, it will naturally render the holders of capital over-cautious, and thus injuriously interfere with future enterprises liable to be subjected to the operation of those enactments.

**MINING IN SPAIN.**—Mining operations throughout Spain are rapidly increasing in consequence of the facilities afforded by the introduction of steam-engines. The extensive lead and argentiferous mines of Rothschid, according to the last returns, have yielded a far greater amount of ore than was expected, and a large quantity has been exported to England. The quicksilver mines are also in a very prosperous state. Explorations on an extensive scale are now being made in different parts—the Government having decided upon establishing some trunk lines of railway, which will run through the principal metallurgical provinces.

**THE IRON TRADE OF FRANCE.**—A great improvement in this branch has recently taken place—considerable orders having been received on account of Government for ship-building purposes, and also for the completion of the different railways now in progress. Mining in general is looking very brisk, both in the metallurgical and coal departments.

**MINING IN BELGIUM.**—The last accounts from Leige, Charleroi, and other localities, represent a general briskness, and several furnaces have recently been put in full blast. A large demand still continues for iron to the north of Europe.

**CONTRACT FOR WELSH COAL TO JAMAICA.**—The Lords of the Admiralty will, on the 4th June, receive tenders for supplying 1000 tons of Welsh coals at Jamaica, for the use of her Majesty's steam-vessels. On the same day the Lords Commissioners of the Royal Hospital, Chelsea, will treat for 650 tons Stewart's Wall's-End, of the best quality, and on the 5th June for supplying the Royal Military Asylum, Chelsea, with 420 tons of good Newcastle or Sunderland coals. This week has been a rather busy one for contracts—1000 tons of Welsh coals for Ferando Po, and 1000 tons ditto for the Island of St. Paul de Lorando, in Africa, for the use of her Majesty's steam-vessels, were contracted for on Tuesday; and on Wednesday for 5000 tons of West Hartley and other sorts, to be delivered at Bombay, for the use of the East India Company's steamers, all of which were strongly competed for. Large contracts are expected soon to be made for Gibraltar and the Mediterranean for steam purposes.

## ELECTRO-MAGNETISM AS A MOTIVE-POWER.

Mr. Robert Hunt, Keeper of Mining Records in the Museum of Economic Geology, communicated the results of his investigations on the probability of our being enabled to employ electro-magnetism as a motive-power, at the Society of Arts, on Wednesday last.

In the first place, the lecturer briefly described the machines which had been constructed by Dr. Schultze, Salvatore Dal Negro, the Rev. James McGanley, Professor Jacobi, Professor Botto, and by Professor Wheatstone, Mr. Davidson, and others, up to the present time, when Mr. Hjorth is engaged in constructing electro-magnetic engines. The author then proceeded to show, in a popular manner, how the power was derived, and he insisted on the constancy of the law which shows, whether in reference to the electric-light, heat, or motive-force, that for any given result produced, a given quantity of some material must be consumed in the battery. That, as it was necessary to burn a certain quantity of coal to produce the required horse-power in a steam-engine—so was it necessary to effect a similar change in a certain quantity of the elements of a voltaic battery to produce any given electro-magnetic force. The result of many hundreds of experiments, deduced in all cases from magnetic arrangements, giving the maximum effect, with the least consumption of material, was as follows:—

A grain of zinc consumed in the battery induced an electro-magnetic force capable of lifting 80 lbs. 1 foot high; whereas, in the boilers of the Cornish steam-engines, 1 grain of coal produced steam-power capable of lifting 143 lbs. through the same space.

The lecturer then proceeded to show that the electro-magnetic force could be produced with the greatest economy in those batteries where the chemical excitement was the greatest. That 1-horse power is obtained in an electro-magnetic engine of any given construction at the cost relatively of 45 lbs. of zinc in a Grove's battery, and of 75 lbs. of zinc in a Daniell's battery—showing that a great mistake was made in endeavouring to obtain slowly-acting—i.e., constant batteries, as they are called—to work electro-magnetic engines.

The action of electro-magnetism through space next occupied attention, and the results deduced by Mr. Hunt from many hundreds of experiments were read. The following is the table showing a few of those:—

The armature being in the first place brought into contact with the magnet, was fixed to one end of a beam, and the weights in the opposite scale necessary to remove the armature, was the measure of the force exerted. By an easy adjustment, the contact of the magnet was afterwards prevented, and the force exerted was weighed off in the same way. By this it will be seen that the attractive force of an electro-magnet diminishes with the distance with astonishing rapidity:—

Contact.	1-25th of an inch.	1-125th ditto.	1-84th ditto.	1-62d ditto.	1-50th ditto.	1-35th ditto.	1-25th ditto.
18	13	11	7 1/2	7 1/2	6 1/2	5	5
26	12	10	7	6 1/2	5 1/2	4 1/2	4 1/2
40	23 1/2	20	14	12	9	—	—
22	10	9 1/2	8 1/2	5 1/2	4 1/2	4 1/2	4
14	8	7 1/2	6 1/2	5 1/2	4 1/2	3 1/2	3 1/2
100	64	50	34	30	25	20	20
98	62	49	32	28	21 1/2	20	20
300	175	129	110	84	63	51	50
320	178	132	111 1/2	86	64	50	50
150	84	63 1/2	50	40	35	25	24
120	65	49	35	30	20	17	14
220	90	60	47	40	30	—	—

The results of experiments made with one of Mr. Hjorth's engines, and furnished by that gentleman, were shown to be as follows:—

Distance of piston from cylinder, in inches.	Attractive force in lbs. avoirdupois.	Angle of direction of magnetic force with the face of cylinder.
1 1/2	160	42° 34'
1 1/4	140	50° 13'
3/4	124	60° 57'
3	88	67° 22'
4	80	73° 39'
5	72	75° 58'

In this it will be seen that the force is measured at the distance of an inch in the first place, whereas, by reference to Mr. Hunt's table, it will be seen that the great loss of power is at distances under the 1-25th of an inch. Mr. Hunt next drew attention to the results obtained by Dr. Scoresby and Mr. Joule, which were as follows:—

Rate of revolution of magnet per minute.	Force of Current.	Zinc destroyed per hour, in grains.	Pounds lifted 1 ft. high per hour.
Hot 140	920	205	21,100
Solutions 180	880	190	17,850
80	850	190	8,800
102	670	151	9,000
114	13300	291	10,030
122	10000	223	12,672

In the investigations which Mr. Hunt has made, he has proved that the moment a magnet is set in motion it loses power, and he gave the following as the mean of many experiments showing this loss:—

Force of current magnet at rest.	Force of current magnet in motion.
2228	920
2232	850
1381	850
3381	678
2081	1300
2035	1000

It was stated, that whenever any magnetic body is made to move in front of a magnet, that the magnet immediately loses attractive force. The mean of a great many experiments being as follows:—

At Rest.	In motion.
Lbs. 150	Lbs. 75
143	70
120	68
75	31
30	14
15	10

A communication from Mr. Hjorth was read by Mr. Hunt, in which he says—"The induced currents by the intermittent motion of the magnets are exceedingly strong. I have, therefore, been led to the idea of making these currents available, by applying a secondary coil around the primary coil, and extending the first to another set of magnets." This result was illustrated by a magneto-electric machine.

It concluded it was contended, that with any form of voltaic battery now known, the application of electro-magnetism, as a motive-power, was almost hopeless within any moderate limits of expense.

A grain of zinc produces, on the best form of electro-magnet, a force equal to lifting a weight of 80 lbs. 1 ft. high; but as this power diminishes so rapidly through space, and as it is again diminished the moment motion is established, the highest power it is capable of exerting in practice is 40 lbs., whereas a grain of coal exerts a power equal to 143 lbs. Zinc costs 216d. per cwt., coal less than 9d.—therefore the cost of working a magnetic engine would, under any conditions now known, be very much more than one hundred times more expensive than the cost of working a steam-engine.

## STEAM COMMUNICATION DIRECT WITH INDIA, AUSTRALIA, AND NEW ZEALAND.

We stated some time ago that a contract had been entered into by the Peninsular and Oriental Steam Navigation Company, and the Board of Admiralty, for a monthly conveyance of mails by their packets from Southampton to the Cape of Good Hope, India, Australia, and New Zealand, but in consequence of the opposition shown by the monopolists of the East India Company to such an advantage to the public, and particularly the mining interest in those distant colonies of the British Empire, it had not been carried into effect. It is stated that representations have been made on the part of Government against this unjust opposition to so great a facility of intercourse, and that the Lords of Leadenhall-street have at last given their sanction to the arrangement, which will be now carried into operation.

**IMPERIAL SALT AND ALKALI COMPANY.**—In the Vice-Chancellor's Court, on Thursday, a petition was presented for the purpose of winding-up and dissolving the company (which had been formed in 1836), on the ground that the petitioner, a gentleman residing in Oxfordshire, had been used by some of the shareholders, and that they were unable to obtain any accounts. The petition was opposed on this ground, that the evidence failed to show that the company was unlikely to become prosperous, and they stated that such was the opinion of one of their clients who held 300 shares in it, and who feared that a reference under the Act might tend to injure its character in the commercial world. Sir J. L. K. Bruce said, "The case appears to fall within some one of the eight cases mentioned in the fifth section of the Act of Parliament, whether the language of the eighth case is construed, as I suppose that it ought to be construed, in the limited manner mentioned in Speckman's case, or in any larger manner. But, from the very extensive want of information which appears to me on all hands with respect to this association, I think it proper to direct a preliminary inquiry. Therefore, let it be referred to the Master, to inquire whether upon any, and what grounds, it is necessary or expedient that this company should be dissolved and wound-up, with liberty to the Master to report any circumstances specially."



## THE TIN TRADE.—No. III.

(FROM A CORRESPONDENT.)

Since the abolition of the coinage duties, it has been very difficult to obtain any authentic returns of the production of tin which can confidently be relied on, and an office for the registering of all mineral produce would form a valuable adjunct to a Mining Record Office. It is much to be regretted that the Legislature has not compelled our mine proprietors to keep a journal of their operations, so that, on reference at any future period, the true state of the mine could be always ascertained. Were this done, so many useless and abandoned mines would not be taken up, and needless treasure wasted, on chimerical speculations. The following table of five years, from the year 1827 to 1831, will show the quantity of British tin coined, together with the relative productions of Cornwall and Devon, and the quantity exported:—

Year.	CORNWALL.			DEVON.			EXPORTED.		
	Blocks.	Cwt.	q. lbs.	Blocks.	Cwt.	q. lbs.	Cwt.	q. lbs.	Value.
1827	30,544	95,882	1 14	602	1,867	3 7	49,474	0 21	1,426
1828	28,983	91,387	3 19	547	1,739	3 23	41,426	2 13	1,239
1829	25,761	83,459	2 11	543	1,827	1 22	33,215	0 8	1,030
1830	24,305	80,979	3 26	589	2,064	0 24	30,425	1 8	1,030
1831	24,016	79,971	1 9	462	1,651	0 19	21,792	2 0	1,030

The production of both counties has since increased, though in what ratio it is impossible to say. In alluding to the Malacca tin, it may be necessary to observe, that the production there has been estimated by McCulloch to be about 34,600 piculs, of 133½ lbs. avoirdupois, being nearly all stream tin. The ore of Sanjeijong, Nanning, and Perak, is reported to yield 76 per cent. of metal without dressing. But the process of smelting, as conducted by the Malays, being very defective, and adulteration frequent, the Peninsular tin fetches only from \$14½ to \$15 the picul; while the tin of Banca, wrought by the Chinese, sells at from \$16 to \$16½. Small quantities of tin occur likewise in Galicia, in Spain; in the department of the Haute Vienne, in France; and in the mountain chains of the Fichtel and Riesengeburge, in Germany. Some has likewise been discovered in Mexico and Chili, and crystals in the albite rocks in Massachusetts. The principal localities for tin in England are situated in the south-west of Cornwall, beyond Truro, in the vicinity of St. Austell, and near Tavistock, in the adjoining county. The ores of tin are but two in number—the peroxide, or tin stone, and tin pyrites; the former only is found in sufficient abundance for metallurgical purposes. This mineral occurs disseminated in primitive rocks, particularly granite, also in large irregular masses, and in beds and veins in pebbles, a quantity of which is denominated stream-works, and where, when it assumes a ligenous shape, it is called wood tin. Although tin is found abundantly, its geographical position is very limited. The various operations of mining and dressing are conducted on the same principle as those in other metallurgical manipulations, though the dressing requires to be conducted with more nicety than that of copper—calcination being employed, after which it is again washed, and treated on German racks, when the schlich is sold to the smelters, under the name of black tin. As this process is, however, generally known, a short notice of the smelting operations may be more apposite here.

The first tin-works which were erected were blowing-houses, using wood solely as fuel. In the reign of Charles I., Sir Bevil Granville, of Stow, in Cornwall, made several experiments, though without success. In 1680, it was tried, and shortly afterwards abandoned; nor did its use come practically into effect until the second year of Queen Anne, when a Mr. Liddell, with whom Mr. Moulit, a noted chemist, was concerned, obtained that Queen's patent for smelting black tin with fossil coal in iron furnaces. The invention of reverberatory furnaces soon followed this discovery, which has since received but little improvement to the present time. The tin ores are all reduced in the counties where they are produced. The assay is taken, though imperfect in a chemical point of view, in a fairer manner than that of copper, which has been one of the causes which have enabled the copper smelters to engross such enormous profits. A certain number of bags of ore, of nearly the same quality, are brought to the works, a small sample is taken from each, and the whole is well blended. Two ounces of this average ore are mixed with about 4 per cent. of ground coal, put into an open earthen crucible, and heated in an air-furnace (in area about 9 inches square) till it is reduced. As the furnace is usually at a good heat when this is introduced, the assay is generally ready in a quarter of an hour. It is then poured into a mould, and what remains in the crucible pounded, and the grains of tin added to the prillion. An exact assay would be obtained by using, in a crucible lined with charcoal, a flux of 5 per cent. of borax. To this a gentle heat has to be applied for an hour, to be then gradually increased, until, at the expiration of an hour and a quarter from the first hour, it is brought up to an intense heat. By this process from 4 to 5 per cent. more tin is brought out; but it would be tedious to the smelter, who, probably, has many samples to reduce the same day; and as the former assay gives the result on a large scale, it may be considered better for practical purposes. The smelting is effected by two methods—by the reverberatory furnaces, where coals are used, and the blowing-houses, supplied with charcoal. The reverberatory furnaces are similar to those used for copper, with the addition of basins to receive the melted tin. The charge consists of from 15 to 24 cwt., and it is prepared so that 20 parts will yield from 12½ to 13 of metallic tin (62½ to 65 per cent.). Before the ore is thrown into the furnace, it is mixed with a flux of culm from one-fifth to one-eighth of its weight; a little lime is sometimes used to make it more fusible. The heat is applied for six or eight hours, during which time the furnace-doors are kept closed. When the reduction is supposed to have taken place, the door is taken down, and the mass worked up to separate the slag. If the reduction is complete, the slag is drawn out and divided into three classes—the first is then thrown away; the second, which is foul, is sent to the stamps; and the third, which is the last removed from the surface, is re-melted, as containing a considerable quantity of metal in the shape of grain tin. As soon as this is cleared away, the tap-hole, which leads to the basin, is opened, and the tin flows out. Here it rests, that the slag still remaining may be separated; when the metal has sufficiently settled, it is lifted out with ladles, and poured into cast-iron moulds, in which a piece of wood is cast to form a hole for the ingot, in order to draw it out when it becomes cold. The refinery consists of two operations—first, a liquation; the blocks, being arranged on the hearth of the furnace near the bridge, are moderately heated, the tin melts and flows into the refinery basin; but, after a certain time, ceasing to afford tin, they leave on the hearth a residuum, consisting of a ferruginous alloy. Fresh blocks are arranged on the remains of the first, and the liquation continues until the basin is sufficiently full, which is when it contains about 5 tons.—Second, refining; in the tin bath billets of green wood are cast; the disengagement of gas from the wood produces a constant ebullition in the tin, brings up to the surface a species of froth, and cause the densest and heaviest parts to fall to the bottom. That froth, composed almost wholly of oxides of tin and foreign metals, is successively skimmed off, and thrown back into the furnace. When ready, the wood is taken out, and the tin allowed to settle; it separates into different portions, the upper being the purest, the middle charged with foreign admixtures, and the lower considerably deteriorated by them. When a complete separation of its different qualities cannot be looked for, it is ladled into cast-iron moulds. The order in which the blocks are obtained denote their purity, those from the bottom being so impure that they must always be re-melted. The refining takes from five to six hours—one to fill the basin, three for boiling, and one to two hours for the subsidence. The operation of *tossing*, which is sometimes used to produce ebullition, is thus performed:—a workman lifts some tin in a ladle to a considerable height, and throws it back, so as to agitate the whole mass; this, however, is not so certain as the previous method. The moulds in which the blocks are cast generally are made of granite, and it is calculated six of them weigh a ton. The residuum from the refining is generally stamped and smelted by itself, when it produces tin of an inferior quality; the mixture from which it is obtained is called prillion. Its inferior quality arises from the circumstance, that the metal which forms these granulations is less fusible than the pure tin, sets quicker, and cannot thoroughly flow off in the metallic bath. About ¾ tons of coal are consumed to produce 2 tons of tin. In the blowing-houses the better ore of the stream works are selected. The smelting is effected without addition. About one ton and six-tenths of charcoal are burned for one ton of refined tin. The great rule is to keep the furnace always full of charcoal and ore. The revived tin is received directly in the first basin, then run into the second, where it is allowed to settle for some time. The slags of the first basin are removed as soon as they set, and divided into two classes—viz.: such as retain the tin oxides, and such as hold the metal in granulations. The tin is divided into horizontal zones, of different degrees of purity. The tin of the superior zones, when sufficiently pure, is ladled in the refining basin, which is previously heated. The tin near the bottom of the receiving basin is always ladled out apart, to be again smelted; sometimes, when the furnace is very impure, the whole is blocked out, to be again treated. In general they receive no other preparation but the green-wood boiling, before going to market. Sometimes the block of metal is heated till it becomes brittle, when it is lifted to a considerable height, let fall, broken to pieces, and presents an agglomeration of elongated grains or tears, called grain tin in England, and *étain en larmes* in France. It is calculated that the reverberatory furnace works much cheaper, and with less loss than the blowing-houses—1½ tons of coal being used to produce a ton in the reverberatory furnace, at a loss of 5 per cent. of the metal, while in the blowing-houses 1 ton six-tenths of wood are required, at a loss of 15 per cent.; it must, however, be admitted that 1 ton of charcoal is equivalent in calorific effect to 2 tons of coal; 70 per cent. of ore by assay, in the reverberatory furnace, generally yields 65 per cent. Grain tin invariably fetches a higher price, which must be attributed to the purity of the ore and the superiority of the fuel; as the use of this, however, is limited, its production must be confined. So great have been the advantages of smelting by coal that, some years ago, a scheme was set on foot for the importing of tin ore from the East Indies, for the purpose of being smelted in this country, and afterwards exported; this, however, failed, not from want of support, but on account of the Custom-house regulations of that period.

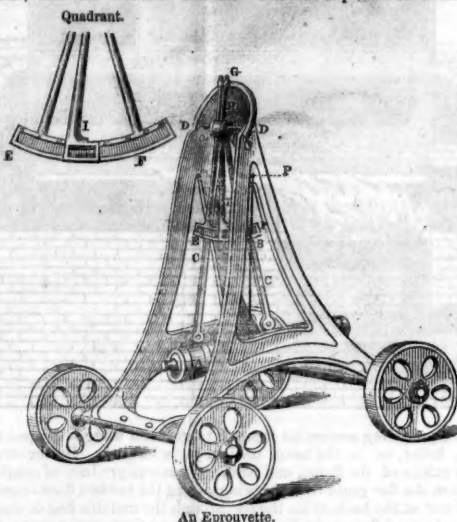
## HISTORY AND MANUFACTURE OF GUNPOWDER.—No. VI.

BY JOHN JOSEPH LAKE, OF THE ORDNANCE DEPARTMENT.

The following methods are adopted to prove the quality of gunpowder:

—A dram is placed on a piece of clean writing paper, and fired with a red-hot iron wire. The powder is good if the following effects are produced: the flame should ascend quickly, with a good report—the paper should be left free from white specks, and holes should not be burnt in it. When blasted on a clean plate of copper, good powder will leave no trace of foulness behind it. These are good criterions in skilful and honest hands, but, by a little maneuvering or unskilfulness, good powder may be made to show the signs of bad, and indifferent powder may be made to assume the characteristics of good. The colour of good powder approaches that of slate, but old and deteriorated powder assumes a brown hue, which becomes quite "foxey" in bad powder. The grains of good powder are free from cohesion, and possess a degree of hardness well known to the practised examiner, when rubbed between the finger and thumb. It should admit of being readily poured from one vessel to another, be free from lumps, and when exposed about 18 days to the atmosphere it should not absorb more than 12 ozs. of moisture to the 100 lbs. of powder. If it absorb 1 per cent., the powder should be condemned. The projectile strength of powder is ascertained by firing a portion from the mortar and epruvette.

The first of these is a Gomer mortar, the bore of which is 8 inches in diameter, and the chamber conical. The bed is placed on a horizontal



An Epruvette.

platform, and the mortar brought exactly to 45° of elevation. A 68-pounder shot is propelled from this by 2 ozs. of powder, very accurately weighed and placed uniformly in the bottom of the chamber by a funnel, and fired by a piece of quickmatch placed in the vent. The average distance the shot is projected by three discharges is taken to indicate the strength of the powder. New large-grained powder should give about 270 feet.

The epruvette is a half-pounder brass gun, A B, suspended by rods, A C, B C, so as to vibrate on the axis D D. E F is a graduated brass arc, secured to the rods, A C, B C, having an index, I, fitted to the axis, D D. The limb, G H, attached to the index, prevents its moving in the direction of the recoil, and, consequently, the arc slides past it during the first motion of the gun. The pressure of the index upon the head of the rods, A C, B C, is such that, without being sufficient to check the recoil, the index may keep the place to which it has moved, and thus show the greatest vibration resulting from the discharge of the piece. When powder is to be proved, the stand, or frame, must be placed in a horizontal position, in both directions, by the plummet attached to the point, P, and the trucks scotched, to prevent any motion by the swinging of the gun when fired. Two ounces of the powder to be proved, accurately weighed, is then placed in a copper ladle, which is pushed up to the end of the bore, and the muzzle raised to an angle of 45°, so as to let the charge fall to the bottom in as nearly as possible the same way every time. The gun is next placed horizontally at rest, and the index, I, brought to zero by means of the screw at G. The gun is now fired by a piece of quickmatch, placed in the vent, and the arc of vibration noted in degrees and tenths. The average of three discharges at Waltham Abbey, Purfleet, and home stations, and of five abroad, is taken to indicate the strength of the powder. In repeating the several rounds of proof, should the zero on the graduated arc not correspond with the index, the gun must be moved backward or forward until they do correspond, but the screw of the index at G must upon no account be altered after the first round.\*

With 2 ozs. of new large grained powder the average should be ..... 21°  
With 2 ozs. of new fine grained and rifle-arm powder ..... 26°

Some spherical grained powder, marked "Turin, 1790," fired from the epruvette at Corfu, in Sept., 1835, gave a recoil of 22°6' and 22°4'.

The great inferiority of the powder commonly sold for blasting and ordinary purposes is shown by the following proofs of quantities procured by Major-General Sir John Burgoyne, the Inspector-General of Fortifications, from several contractors and respectable dealers—the analyses of which were given in No. V. of these papers:—

No. of Samples.	RANGES BY MORTAR.—FEET.				Epruvette, degrees.
	1st fire.	2d fire.	Mean.	Mean.	
1	Said to be of same manufacture, but procured from different dealers.	97	93	95	16.6
2		142	137	139½	17.3
3		150	91	120½	18.7
4	Two qualities from same manufacturer, but different dealers.	125	99	89	14.6
5		125	148	136½	—
6		83	67	75	—
7	Two qualities, from the same manufacturer.	118	113	115½	17.7
8	facturers.	43	55	49	16.9
9	Three qualities, from same manufacturer.	169	158	163½	12.0
10	facturers.	128	148	138	—
11		127	107	117	15.2
	Government large grained, or cannon, powder.	—	—	265	21.0

The same distinguished officer also gives the following results of experiments on the relative strength of Government cannon, or large-grained powder and merchants' blasting powder, by the bursting of 5½-inch spherical case shells:—

GOVERNMENT CANNON POWDER.				MERCHANTS' BLASTING POWDER.			
No. of Experiments.	No. of shells.	Charges of powder.	Effect.	No. of shells.	Charges of powder.	Effect.	
Ounces.				Ounces.			
1	1	4	None.	—	—	—	—
2	2	6	None.	—	—	—	—
3	1	8	Burst.	—	—	—	—
4	—	—	—	2	8	None.	—
5	—	—	—	3	10	None.	—
6	—	—	—	2	12	Burst.	—
7	—	—	—	4	11	None.	—
8	5	7	None.	—	—	—	—
9	6	8	None.	—	—	—	—
10	7	9	None.	—	—	—	—
11	8	10	Burst.	—	—	—	—
12	—	—	—	9	12	None.	—
13	—	—	—	10	14	Burst.	—
14	—	—	—	11	13	Burst.	—
15	12	9	Burst.	—	—	—	—
16	3	8	None.	4	12	None.	—
17	—	—	—	—	—	—	—
18	5	9	Burst.	—	—	—	—
19	—	—	—	6	12	Burst.	—

In the proof of gunpowder many precautions have to be observed. The piece must be fired immediately after it is loaded, and it must be regularly spunged after each round, and well washed out and dried after the proof of each sample before another is proved. Particular attention should also be given to the temperature of the metal, for I have known it to rise so rapidly and irregularly that the business has had to be stopped, for no

\* Since writing the above, the proof by epruvette has been discontinued in the Ordnance Department—the mortar proof being alone retained to ascertain the projectile strength of powder.

† Loaded and fired when warm from previous explosions.  
‡ Third trial of same shell, but loaded and fired when warm.  
§ Second trial with same shell, but quite cold.

proper judgment can be formed of the strength of powder fired from a heated gun. The reason of this is, that when the gun is cold a considerable quantity of the powder is discharged without having gone off, it not having been raised to the proper temperature before it was forced out; but when the gun is warm the powder becomes heated before the light is applied, and the quantity discharged without undergoing combustion is less. This may be proved by placing a board a little distance from the front of the piece, when the powder that has not exploded will be found to have entered the wood like so much small shot.

In proving powder by mortar in France, a brass ball, of 60 lbs. weight, is used. The diameter of the mortar is 7 inches 9 points, or three-quarters of a line, and has one line of windage. The chamber holds exactly 3 ounces; their best powder must give a range of 90 toises (540 English feet), and their reserved powder 80 toises (480 English feet), to be admitted into the service.—*Portsmouth, May 18.*

## IMPROVED PRODUCTS FROM COAL.

A patent has been secured by Mr. C. Cooper, of Southampton-buildings, for improved methods of treating coal, the specification of which has just been published, some portions, at least, of which appear likely to tend to a greatly economised use of that article of fuel. His claims are:—For the purification and separation of coal, by taking advantage of the difference of specific gravity of the different particles. This is effected by passing it through a jogging sieve, furnished with a number of partitions, composed of perforated metal plates, the perforation of each being smaller than the one above, and having a portion of the sides of each cut away, whereby the different-sized lumps are shaken over into receivers, and the fine dust delivered from the last division. The foreign matters, such as pyrites, may be picked out by hand from the various collections, which contain no dust; while the dust will be comparatively purified, in consequence of the coal being of a more friable nature than the foreign matters.

For a combination of a continuous acting and classifying water-sifting apparatus, for separating coal from foreign matters, and also for separating from each other substances of different specific gravity. The apparatus consists of a water-trough, divided into two chambers by a perforated vertical partition, reaching nearly to the bottom. The materials are placed in one chamber; and in the other is a piston, which, at every down stroke, agitates the water, and holds the matter partly in suspension, which, when left at rest, descend according to their respective gravities with the coal at the top of all, when they may be separated.

For a mode of constructing coke ovens shallower and longer than heretofore, with one end larger than the other, with openings along the centre of the floor, and in the lower parts of the sides communicating with flues furnished with doors, for the purpose of changing the currents of air alternately. There is a moveable arch, or cover, which may be moved out of the way when charging with coal.

For increasing the density of the coke, by ramming the coal into iron cylinders, which are placed over holes in the floor, and after the oven is filled are withdrawn.

For a mode of discharging the ovens by an iron plate fitting the small end of them, and being pushed forward by a screw, forces the coke out at the larger end.

For a mode of extinguishing coke, by placing it in a vessel with two casings, having water between, the steam from which is conducted to the coke, to expel the air, and complete the coking operations.

For a method of distilling tar by the introduction of steam, the partial removal of atmospheric pressure in purifying and washing the oil, and in the application of the process to the distillation of naphtha, and other products of coal. The tar is placed in a boiler, and, when near the point of ebullition, steam is conducted into the centre of it by means of a steam pipe with "rose" ends; the vapours are led into a condenser, fitted with an air-pump, by which a constant partial vacuum is maintained. This is connected with a reservoir of water, the oil is drawn off as required, and the water allowed to return.

The last claim is for a mixer, for intimately combining the materials used for making artificial fuel, with machinery attached, for forming them into bricks, or lumps, which may then be taken away by hand to the drying floors.

## MINING CUSTOMS—"LETTING BARGAINS."

In the *Mining Journal* of 4th May, we reported a cause (Harrison v. Ames) which had been argued in the Vice-Chancellor's Court, on the previous day, for an injunction to restrain the defendants from raising lead or other minerals from under a piece of ground, comprised in certain premises situated in Wales, and demised to the plaintiffs by an indenture of December, 1835, and known as the "Lloe Lead Mining Company," or from removing or disposing of such ore or other minerals as the defendants had raised. An appeal from the order then obtained has since been argued before the Lord Chancellor, at his private residence, and his lordship, having taken time to consider the matter, has forwarded the following judgment to the parties interested:—

"The plaintiffs, alleging that the defendants are in possession of their land under an accustomed license of their agent, prayed for an injunction to preserve the property until they can recover at law. The authority of the agent, W. Jones, is impeached upon two grounds. First, that although by the custom he might grant a lease for one year, which has expired, he took upon himself to grant it for two years. And secondly, that he had no authority to grant any license as to unopened land. To support an injunction, the plaintiffs must prove one, at least, of these propositions, and also that they were ignorant of the agent having exceeded his authority, and had not done anything to confirm his acts, or deprive themselves of their right to the interference of a court of equity. So far as the case depends upon the affidavits of the plaintiffs, swearing, as they do, to both propositions, if they are disproved as to parts capable of contradiction, no credit can be given to those parts which speaking of what could alone be known to the plaintiffs themselves, cannot be so contradicted. The first affidavit of the plaintiffs, admitting, as it does, the custom as to one year, denies that it extends to two, or that it exists at all as to unopened land; but as to this custom being so confined, no one confirms them, and they bring no proof in aid of their oath; but the defendants not only deny such a restriction themselves, but produce five experienced persons, who speak to the custom applying to two years as well as one. This, however, is hardly so strong as the fact that, in all the plaintiffs' complaints, the license extending to two years is not made the objection, but that it applied to unopened ground, to which the affidavits of William Jones, the agent, and those of all the other witnesses for the plaintiffs, are confined. I, therefore, consider that this first ground of the plaintiffs' equity is disproved, and that the license for two years was within the custom—meaning by that word such known rule and habit of dealing in a particular trade or business, which constitute the relationship between the parties, and constitute the basis of, and form part of, every agreement between them, when the contrary is not expressed. Secondly, if their affidavits be proved to be false as to this point, I should very little regard it as to the unopened ground, but some attempt is made to support this part of the case upon other evidence. I will proceed to examine this evidence, only observing upon the apparent inconsistency of refusing a license, which may prove a premium for exploring land unopened and untried, and granting it where the land has been already opened, and the experiment, to some degree, at least, tried. W. Jones, however, the agent of the company, says that the custom applies only to opened ground, although, if that be true, he violated his duty to his employers in granting the license in question, and actually watching and keeping an account of the defendants' working; but I do not find any other confirmation of the supposed restriction upon the custom, although that, and that alone, appears to have been the objection relied upon by the plaintiffs, and it is positively denied on the part of the defendants, by William Reed and Jones. But what makes this evidence to my mind immaterial is, that the defendants commenced their works soon after the date of their licenses, and they being in a public situation, must have been known to all the neighbourhood and the defendants; that in April, 1849, the plaintiffs, Edward Jones, John Marsden, and James Bill, visited the works, and that Edward Jones encouraged the defendants to go on. This affidavit was filed on the 19th April, 1850, and on the 1st May, 1850, an affidavit was filed by Charles Bill and John Marsden, professing to be an answer to their statement, in which they assume it to have reference to a visit to the mines on the 16th June, 1849, and answer it accordingly, thereby leaving untouched the defendants' statement as to what had taken place in April, 1849. And Edward Jones, though he made a separate affidavit, filed the same day, says nothing to what the defendants alleges him to have done and said in April, 1849. William Jones, the agent, and one of the plaintiffs, was the active party to their working of unopened ground, but independently of this direct evidence bringing home to several of the plaintiffs the knowledge that the defendants were working unopened ground, and that no objection was made by them until the value of their experiment appeared, I think that the plaintiffs are precluded upon two grounds from now raising the objection. I am of opinion that upon the evidence as it stands, the custom is not confined to unopened ground, and that if it were, the plaintiffs have in the present instance, by their conduct, deprived themselves of all right to the interference of equity upon that ground. The objection that the defendants have exceeded the limits of their grant is much too general, and the evidence is not sufficient to support it. I think, therefore, that the injunction should have been refused, with costs; but if the plaintiffs require leave to proceed at law, they must have it."



## ON THE EXPLOSION OF STEAM-ENGINE BOILERS.

Of late years, and more particularly during the last few months, steam-engine boiler explosions, both in this country and in the United States of America, have been of very frequent occurrence. The awful sacrifice of human life, and great destruction of property usually attendant on them, invest these matters with grave interest.

In the United States high-pressure steam is commonly employed—essentially so in the steam-boats which navigate the Delaware, the Hudson,

Fig. 1.

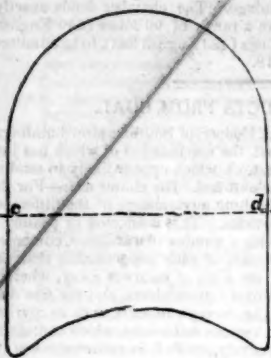
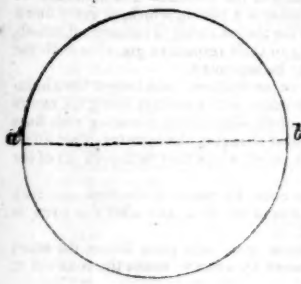


Fig. 2.



and the Mississippi. In the United Kingdom, although high-pressure steam-engines are used, yet the employment of them may be considered as the exception, not the rule. Anomalous as it may seem, it is nevertheless true, that explosions of the kind, in this kingdom, more frequently take place with boilers worked either at low, or at moderate rates of pressure, than with those worked at high. We wish particularly to impress this knowledge on the public mind. It is essential to the interests of the community that it should be so. A want of that knowledge, combined with the erroneous opinions which generally prevail on the cause of steam-boiler explosions, and which attribute such accidents, almost universally, to great intensities of pressure of steam, or the liberation of the gases, have, we are induced to believe, been the cause of many such catastrophes. When, therefore, we reflect how important it is for the proprietor of a steam-engine, as well for his own pecuniary interests as the personal safety of those who are employed by him, to be acquainted with every minute particular of matters of this nature, we are led to explain what, in our opinion, is one primary cause of such explosions.

In the annexed woodcuts, fig. 1, represents a vertical section, and fig. 2, a plan of the underneath part of a circular-shaped boiler, concave at the bottom, and hemispherical or domed over at the top—not uncommon in the mining

districts of the kingdom. Boilers of this kind, from having been extensively adopted by the eminent engineer, are not unfrequently called the "Smeaton boiler;" by other persons, the "egg boiler," from its appearance, when rising above the brickwork, assimilating to that of an egg in its cup.

It has fallen to our lot to witness, during our professional practice, the destructive effects of explosion, as produced by two boilers of this peculiar construction—one in Lancashire, the other in Staffordshire. In both instances, the boilers, though of great weight, were lifted from their seats, and blown to almost incredible distances. Yet the boilers were employed ordinarily in generating low-pressure steam; and, so far as could be ascertained, there was no reason to doubt that, at the time, either of them was acting otherwise than in the usual manner. Numerous opinions, entirely of a speculative character, were advanced as to the causes of these explosions, most of them hinged, as is usual in such cases, either on the supposition that the safety-valve was defective, which allowed of an undue augmentation of steam in the boiler, until it attained to a pressure that could not be resisted; or, to the non-effective working of the hot-water pump, which, by not supplying the boiler with water to compensate for that vapourised, allowed the metal of the boiler to become so heated by the action of the fire as eventually to absorb the oxygen from a portion of the water, and thereby liberate its other constituent—the hydrogen—whereby, in the opinions of such persons, explosions do take place. We, from our own examinations, entertained very different thoughts at the time, although we had not occasion publicly to avow them. Since those periods the personal inspection of numerous boilers has confirmed the impressions we then entertained.

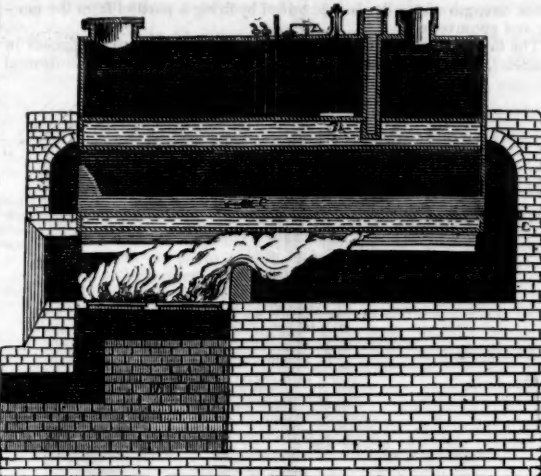
We shall now endeavour to elucidate, by familiar exposition, the causes of such explosions; and we do so the more willingly as we are in the hope that much good may be elicited by eliciting the attention of engine proprietors and engine-tenters to the matter. We must state, however, in the first place, that, as we have not got by us, convenient for reference, the dimensions of the two boilers to whose explosions we have referred, we shall, for the argument, take suppositions dimensions. Suppose the diameter of the circular part of each boiler, at *a*, *b*, or *c*, *d*, to have been 12 ft., and that, for sake of simplification, the curved top and bottom parts of the boiler, though convex and concave, be considered to have been flat, each presenting the same diameter of 12 ft.; under such circumstances, the area of the top and bottom plates, respectively, would have been 16,266 inches. If, therefore, the pressure of the steam within the boiler ranged no higher than 12 lbs. beyond the atmosphere, the total amount of pressure on the top and bottom plates would not have been less than 195,432 lbs., or about 87½ tons each. Now, if we examine attentively the nature of this pressure, or force, we shall perceive that, so long as the boiler remains sound, or is in good condition, this enormous amount of power acts equally, and internally, both against the bottom of the boiler, with a tendency to force it the more firmly on its seating of brickwork, and against the top of the boiler, with an inverse tendency to project it into the air on the principle of the sky-rocket. Both forces being equal, and acting in opposite directions, balance one another. Hence, so long as the boiler remains sound, these conditions are undisturbed, and the action of the force is equivalent to that of statical equilibrium. The boiler, therefore, has no tendency to ascend or descend, by virtue of that pressure, but is retained on its seat by the weight of the metal of which it is composed, and the weight of the water within it. Suppose, however, on the other hand, that, from long usage, and consequent weakening of the boiler by the action of the fire upon it, a rent, or considerable fracture of the metal, takes place below, so as to allow of a sudden and comparatively large escape of heated water into the flue, or space, *g*, *h*, and on and against the red-hot brickwork, the consequences then become frightful. The pressure on the top and bottom of the boiler, internally, still balance one another, minus the less amount of pressure on the bottom, caused by removal of that portion of the metal displaced by the fracture; but underneath the boiler, between it and the brickwork, the destructive effect of the pressure—caused by instantaneous evolutions of large bodies of steam from the heated water and heated brickwork—becomes alarmingly great. It is of itself amply sufficient, without extraneous aid, to account for all those devastating and painful casualties we are accustomed to witness at such times. We repeat that, just before, and immediately subsequent to, the fracture, the pressures in the interior of the boiler are equal, minus the less amount of pressure on the bottom, subducted by the opening made by the rent; but beneath the boiler, the pressure acts equally against the brickwork of the flue, *g*, *h*, and the under-side of the bottom part of the boiler; and as this latter is unconnected with its seating of brickwork, excepting by its weight, which, in a boiler of that construction, does not, with its complement of water, often exceed 20 tons, the projection of the boiler into the atmosphere is the inevitable result.

It is not possible to determine what the amount of that projectile force may be; for, when the fracture takes place, and the water, by escape, occupies a greater space, the pressure of the steam is most probably diminished in the interior of the boiler, although acting with equal intensity of force as regards that pressure, both against the top and bottom of the boiler internally. But beneath the boiler the pressure is augmented to an enormous extent, partly by large bodies of the heated water—already at the temperature of 245°—flashing, when liberated, instantaneously into steam; and partly by other quantities of such water being projected against the red-hot brickwork of the flue, and on the large mass of ignited coal on the fire-grate; and by suddenly absorbing from such sources other and large quantities of caloric, being as instantaneously flashed into steam. It

should also be borne in mind that the additional quantities of steam thus generated exert no force whatever inside the boiler, or comparatively none, and that the whole amount of the pressure is directed against the exterior of the boiler, increasing largely the projectile power.

Suppose, therefore, that the amount of pressure lost by the escape of the water into a larger space, at the time of the fracture, to be reinstated by the additional quantities of steam thus suddenly evolved (and we think it quite possible), it will be perceived that, in such case, the pressure exerted against the under side of the boiler by the newly-evolved steam is 87½ tons; that the resistance to that force is derived only from the weight of the boiler, and the water within it, together amounting, probably, to 17½ tons, and that the projectile force is equal to 70 tons. Hence the boiler must be blown from its seating, and projected through the air, and the brickwork be scattered in every direction. But even if we admit the force, as exerted by the pressure, to be equal only to one-half of that amount, or 35 tons, still being derived from an elastic agent, it is amply sufficient to produce all those devastating effects which, under such circumstances, we are accustomed to see recorded.

The direction that an exploded boiler may take in its flight most probably is influenced by the position of the fracture. This will be better understood by reference to the subjoined diagram—



In the preceding section let figure 3 represent a waggon-shaped steam-engine boiler, set in the usual manner in brickwork. By the arrangement thus exhibited, the flame, and heat, and gaseous products of combustion pass from the fire-grate over the bridge along the bricked flues beneath the boiler, and at the back of it; thence through the metallic flue of the boiler into the bricked flue at the front of the boiler, where the current divides itself, and passes through two brick flues, arranged one on each side of the boiler, into the ordinary damper-flue, whence it passes into the chimney.

By examining the diagram, it will be at once obvious that, as the flame and heat flow continuously over the bridge, and through the flues beneath, and at the end of the boiler, the brickwork of those flues must imbibe so much caloric as to become red-hot. Further, that should any fracture or rent of the boiler, take place, so as to allow of a portion of the heated water to flow thence on that red-hot brickwork, enormous volumes of steam must be instantaneously generated—capable, by that agency alone, of producing all those disastrous effects to which we have referred. In a waggon-shaped boiler, however, the effects, under the same pressure, will be greater than with the Smeaton, or egg-shaped boiler, by consequence of the greater area exposed to the pressure.

It is well known, naturally, that all power is transmitted in a right line, and that the operation of compound forces is necessary to produce any deviation from it. If, therefore, the steam thus suddenly evolved from the heated water, by its coming into contact with the red-hot brickwork of the flue, could, at the same instant of time, be equally diffused under every portion of the bottom only of the boiler, and act on every part of it with equal intensity of pressure, there is not a question that the boiler would be projected vertically into the air. But such range of flight is barely likely to take place. Even if the steam could be equally diffused under every portion of the bottom part of the boiler at the same time, the fire-grate, owing to the interstices between the fire-bars, does not present that firm base for the steam to act against as is presented by the solid mass of brickwork behind the bridge; therefore, the great probability is, should any such fracture take place, either over the bridge or on the right hand side of it, or over the flue, to however small an extent, the boiler will be projected through the air in an oblique direction; and the deviation from the vertical line will be greater or less, accordingly as the fracture takes place nearer to, or farther from, the bridge, towards the chimney. The greater accession of heat also that may be imparted to the water by such brickwork, and the action of the pressure on the end of the boiler at the flue will tend still further to the oblique direction we have stated.

The observations we have thus made are of great practical importance. Hitherto, from the awful effects of such explosions, the minds of practical and thinking men have been devoted more to a search after some unexplained cause for increased production of pressure within the boiler, rather than to an elucidation of the simple one we have developed, and by which, in our opinion, most of those catastrophes are produced. High-pressure steam is not indispensably necessary to an explosion. Low-pressure steam is amply commensurate to the end. We have shown this by our remarks on the explosions that took place of the two Smeaton or egg-shaped boilers; and we can confirm or strengthen the statements by adding, that we were present shortly after, and witnessed the effects that had been produced by an explosion of a waggon-shaped boiler. It had been worked, customarily, at from 7 to 9 lbs. pressure on the square inch; and there was reason to believe that that pressure had not been exceeded at that time. It was in connection with two other boilers—neither of which had exploded. In short, it is to neglect, superinduced by a false notion of security, that such explosions may, in general, be attributed. Engine proprietors and engine-tenters, not having been aware of the danger, have, until now, been indifferent, comparatively, as to any defective state of a low-pressure boiler. How frequently do we see such, while working, leaking badly; but not sufficiently to produce an explosion? How often do we hear that the engine-tenter, even with the sanction of his employer, has had recourse to some paltry patchwork of a contrivance, to prevent a defective boiler from extinguishing the fire? Had the danger we have pointed out been known, would such things have been allowed to exist? Both the engine proprietor and engine tenter would, for their own interests, have been averse to it. It cannot, therefore, be too well known that steam-engine boilers are, by neglect, quite as liable to be exploded when worked at low rates of pressure as at high; nor can the reasons we have thus assigned as the cause of such explosions be too widely disseminated.—*The Civil Engineer and Architect's Journal*.

SWITZERLAND.—A letter states, that "Mr. Stephenson, the English engineer, was lately invited by the federal Government to go to that country to lay out certain lines of railway; but he has just notified that he cannot accept the invitation before the end of the month of August; and, in consequence of this, the department of public works has engaged Mr. Gooch, another English engineer, to go to Switzerland in June."

NEW RAILWAY CARRIAGE.—We observe that a new railway carriage—the construction of which, both as regards elegance of appearance and convenience of accommodation, shows a vast improvement compared with those now generally in use—has been introduced on the Ayrshire line. The two centre compartments are for second-class passengers, and either extremity has been fitted up as a first-class coupe. In these no pains seemingly have been spared to promote the comfort of the passengers, and lessen the tedium of their journey, while the internal arrangements are adapted to the enjoyment, on the part of the traveller, of a most agreeable lounge; the end corners are cut away, and filled with plate glass, through which, and other spacious windows, every facility is afforded for viewing on all sides the country through which he may be journeying. We believe that, during the few weeks they have been tried, they have been found to answer admirably. The carriages, we are told, were, built at the company's workshops at the Glasgow terminus, where a large number of the same style, intended for the through line to Dumfries, are in process of construction.—*North British Mail*.

## Original Correspondence.

## MINE INSPECTION—LIFE INSURANCE.

SIR,—As it appears to be a fact, however hard to believe, that there are persons having some knowledge of mining operations who think they may be conducted more safely and effectually under the care of individuals selected by the Government than if chosen, as at present, by those who are practically versed, and have a stake, in those operations, would it not be very advantageous if the reasons of this opinion were stated?—and where can they be more appropriately advanced than in the columns of your Journal devoted to such intelligence? Those who feel an unhesitating confidence in the benefits of an official mine inspection must surely have arranged in their thoughts some plan as to the manner in which it is to be effected, the duties which the inspectors will be instructed to fulfil, their number, the number of collieries each inspector will have to superintend, the class of persons who are to be selected, the mode of their selection, and all those particulars which, in one shape or other, must form the very substance of an enactment. As yet, I have been unable to meet with these particulars. From the report of Sir Henry De la Beche, some years since, down to your latest correspondent, all the advocates of inspection appear to have one united agreement in opinion—that its establishment will be a mess at first, and will have by degrees to work itself to perfection. I fear, in this day, we are rather too fond of such experiments; "he who teaches himself wisdom has a fool for his master" is an old Italian proverb. The warning is, perhaps, not much thought of—rather, I think, there is a prevailing taste for this mode of instruction; yet I am not certain the proverb is entirely worthless. I cannot call to mind many instances of undertakings which have blundered themselves into success, and stumbled to a right end from a wrong beginning. So long as the advantages of such a course are at all doubtful, it cannot be altogether condemned in such an important affair as handing over our mines to the care of Government, that some little preliminary inquiry should be ventured on as to the best means of beginning well.

The contemplated plans might be propounded and illustrated by the application of instances. For example, about three weeks since, an explosion, attended with the loss of six lives, occurred at Burnley, in Lancashire. The colliery was well ventilated, there were regulations for safety, under which the viewer had to take a survey of the mine before the miners were permitted to enter; but, by the disobedience of the men, their lives, and that of the viewer himself, were sacrificed. Let it then be pointed out how the Government inspection is to be applied to such an instance. Will it be the duty of the officer to descend and inspect the workings, whilst the viewer controls the men in obedience?—or will he remain to command the men, whilst the viewer proceeds to inspection? In either case, is there to be an inspector appointed for every colliery; because, as the inspection took place every morning, this must be necessary, unless, indeed, as an alternative, he were appointed to a certain number in rotation, and each colliery to delay working until its predecessor had been inspected. If six collieries were confided to his care, with good railway communication between each, in about nine hours he might get through the whole six, and start the last colliery in full work at 3 o'clock in the afternoon. This hard duty might be a little relieved if some collieries worked constant turns, and required the inspector only on Monday morning. No doubt it will be one of the great benefits to the working miner to have to wait until 3 o'clock in the day for his work; but how is it to be arranged amongst the masters?—which is to have the benefit of the inspector's morning countenance? It was proposed, about 50 years since, by the then Government, to levy an excise duty on pig-iron, each furnace, under a penalty, to remain untapped until the exciseman came round to gauge the metal. Are there none of the framers of that proposition still surviving to lend an aid to the present enactment? Meanwhile, the masters, at Burnley, have issued notice of immediate discharge to every workman who disobeys their rules; and this, carried out peremptorily, might prove nearly as efficacious as the conversation of the perambulant inspector.

Whilst the problem of this accident is being solved, let us consider how a system of life insurance would have affected its results. Each man having to pay a small monthly deduction from his wages to entitle him to the advantages offered, the agent of the insurance company would stipulate that a gross act of negligent disobedience in any individual would amount to a forfeiture of his policy. The rules of the mine, to which such obedience must absolutely be required, would be arranged with the mutual sanction of the colliery owner and the insurance agent. The monthly deduction of a part of his earnings, small though it be, would be sufficient to fix the continual attention of the workman on his responsibilities and risks; a jealous mutual inspection would be constantly in play. The unfortunate viewer in this case, who fell a victim, in the discharge of his duty, to the disobedience of others, would leave to his family the amount of his policy in full; the policy of the man who unscrewed his lamp would be justly forfeited; the policies of the minor offenders who left their post would be at the discretion of the company to make such payments, if any, as particular circumstances might point out; and the single man, who set an example of obedience, and saved his life, might have an equitable reward in encouragement of good conduct. Is not this quite as good a beginning as a "cramped and limited inspection?" A great deal has been said, both in and out of Parliament, in favour of an inspection in this country, because it is instituted abroad. This seems as good an argument as to urge that, because there is a president in Paris, we ought to have a president in London in place of a queen. We should not like to pass through the steps necessary to effect such a change; neither would British mine proprietors like to be subjected to the disadvantages and deficiencies which have led to a Government inspection abroad. Instead of such very pusill analogies in argument, why do not the advocates of the importation enter into the particulars of the existing plans in foreign countries, and illustrate them, as I have required for those proposed at home, by appropriate examples?—as, for instance, to state what the Government inspector in Belgium was doing at the late explosion. Was he absent, or incapacitated by illness, or was he only a learner, or had there been a mistake in his selection? What, in short, were the facts of the failure; and then draw deductions for our own improvement? This would look in earnest, and inspire a confidence in their intentions; but when this and every other event, or solid consideration, which tends to discredit their views, is carefully avoided without notice, how is it possible to resist the conclusion, that the desire is to establish inspection in this country, not upon its merits, but against the very face of its demerits and acknowledged inadequacy.

May 20.

DAVID MURPHY.

## CRYSTALLISATION OF IRON.

SIR,—It appears by your report of the proceedings of the Institute of Mechanical Engineers, at Birmingham, that Mr. Stephenson has been looking closely into the fibre of iron. His results are in strict accordance with what I have advanced, that the appearance of the fibrous, or crystalline, character depends much more on the mode of affection which the iron has towards fracture than on any inherent difference, or change, of structure. Bar-iron must be considered to possess, at the same time, two distinct arrangements—the natural and the artificial. The artificial disposition in striae and lamina, induced by mechanical means, co-exists with the natural disposition in crystals, which is the inherent property of the metal. Both must, therefore, be present in every elongated bar of iron; and, according to circumstance, one or other predominates in the appearance of the fracture. I think Mr. McConnell yields too much in admitting the term fibrous, as applied to iron, to be a misnomer. The analogy is strictly correct, which applies the term to any substance where the particles are arranged in longitudinal masses, with so much tenacity that they elongate under a disruptive force, and then separate at their weakest points. In the ordinary mode of breaking iron to test its fibre, the centre of fracture is a fulcrum, on either side of which the elongating strain takes place, which finally results in fracture at the thinnest and weakest portions of the bundles which compose the whole substance. I have never seen a bar of iron torn asunder by a straightened pull, which would be a purer test than an operation in which tension on the upper surface is combined with compression on the lower, and the fracture is effected by a succession of alternate leverages, of which resistance to compression is the support. Experiments upon the fracture of fibrous and crystalline iron, under such a test, by those who have opportunities at command, would furnish very instructive points of comparison. It would probably exhibit by no means such a fibrous appearance as where the bar is broken by bending, under which the lamina, or bundles, of the bar are strained into arcs, having such very different proportions of the whole curve, and such different degrees of tension, that the direct tendency is to delaminate, and, therefore, exhibit the appearance of fibre. We know that, by a sharp effort, a stick may be broken, which, by a slower process of bending, so as to separate the filaments, it will be impossible to break. The breaking



of a piece of soft iron, as a horse nail, by bending to and fro, is so precisely similar to the same inflection on a piece of fibrous wood, that I cannot see the slightest objection applies to the term fibrous iron. All that is required to induce the appearance of this character is sufficient softness, or pliability, in the metal. When deprived of this, by whatever means, fracture takes effect directly through the substance across the crystals, which we cannot doubt essentially exist in all iron, however they may be disguised by the effect of mechanical processes. If vibration has the power of destroying the tenacity of iron, it must be through the existence of this compound texture. Natural vegetable fibre has not such a double composition. We have not the slightest ground for supposing the filaments of flax are crystallised; but we may be sure that, whatever non-natural fibre we may superinduce upon iron, it still comprises the natural crystallisation. The interlacing of the planes and points of these crystals, form lines of resistance to the course of an interior vibration, which the impeded wave struggles to annihilate—tending thereby to weaken the cohesive contact. The cases which have been observed of the apparent change, are those in which the impulse of vibration has been in the direction which would most tend to separate the crystals in the line of fracture. It is most interesting to inquire by what means the tenacity of iron can be impaired; but as to its practical effects, if it can be established that vibration has such a tendency, it is immaterial whether the structure is changed, or merely the inherent weakness of a crystalline structure developed, by the action. Mr. Stephenson must be most naturally and properly jealous of any hasty or insufficient assumptions against the stability of the magnificent novelty he has created; for if either mode of change can be proved as a certain effect of vibration, the days of the Britannia Bridge are numbered, and it will be time, in 10 or 15 years hence, to be cutting plates out of the sides to test how satisfactorily the change is progressing, and if there is a speedy prospect of its terminating its constantly burdened and agitated existence by a plunge into the deep below. Mr. Thorneycroft claims to possess a certain means by which he can make either the tenacious or the crystalline character predominate at pleasure in the same quality of iron. Can he promise to impart the former permanently? To know how to do it, certainly is the first step towards that consummation. That iron which has its tendency to separate vertically, rather than horizontally, is the best material for rails is unquestionable; but the desideratum is reversed in tubular bridges; and I wish he could give us all full satisfaction on this important and disputed topic.

May 15.

DAVID MUSHET.

## IRON FOR RAILWAY PURPOSES.

Sir,—The "un-Civil Engineer," whose letter upon this subject appeared in your impression of the 4th inst., and to which, in consequence of being "a paid railway official," I have not, till now, been enabled to reply, has placed himself fairly before the public, and will be judged, according to his merits, at their tribunal; therefore, I am relieved of the necessity of "presenting myself as the only living oracle capable of deciding" what his calibre, or how far he has, by the letter referred to, shown his acquaintance with the subject upon which he writes, and power to reason dispassionately thereon; and have only to remark upon the very small portion of his letter that has, in reality, any practical bearing upon the subject. To the question of "what are inventors to do with their inventions?" I reply in the words of the gentleman by whom it is asked, and answer, "Press them upon public attention in every legitimate way, until, by public voice, they are either approved or condemned;" but, in so doing, be careful to avoid everything unbefitting gentlemen, or men of scientific attainments. And what, in return, permit me to ask "Civil Engineer," does he consider "the legitimate mode of pressing upon the attention of the public" such an invention as that now under discussion? Is it that of sending a few samples to one particular railway; and at the expiration of a period, infinitely too short to justify a conclusion in reference to their merits, employing, what "Civil Engineer" is pleased to designate, "a paid official," to write a flaming report upon them? or would not that of sending samples to various engineers of eminence in the profession to which they belong, whose names would be a sufficient guarantee to the railway world for the truth of what they assert, and patiently await the reports they would make, after testing the sample rails against others of ordinary make, be not only a more legitimate mode, but one more likely to lead to the accomplishment of what the inventor has in view?

I apprehend that a few words from the eminent engineer of the railway upon which the rails "Civil Engineer" has so much to say in favour of are laid, would have more weight with the railway world than a thousand reports from Mr. Bowman in his capacity of "paid official," if even accompanied by as many confirmations from "Civil Engineer" in a more equivocal capacity, which I am not in a position to define.

With due deference to so high an authority as "Civil Engineer," I apprehend that the question, in reference to the patent anti-laminating rail, is not precisely as stated by that gentleman—viz.: "Is there any real value in the particular make of rail the opulent ironmaster has recommended; and has it had such trials as are sufficient to determine its real merits?" but, rather, is the claim made on behalf of these rails to superiority over all others so far established as to justify the directors of railway companies in procuring them at the increased cost necessarily attendant upon their adoption? Now, having already, if "Civil Engineer" can be believed, "presented myself as the only living oracle upon this important subject," I must, unhesitatingly, assert, "although it may lay me open to the venom of 'Civil Engineer,'" that a three years' test, if even it were free from defective exceptions, is by no means sufficient to accomplish this object. In proof of this, I repeat my former assertion, that rails of notoriously bad make have stood a four years' test equally well; to which I may add, that many miles of rails, of ordinary make, have been in wear much longer, and are now in appearance equally good. And if "Civil Engineer" had taken the trouble to consult Mr. Dockray, of the London and North-Western Railway, upon the subject of his experience, in reference to the average duration of life of an ordinary rail, or if he had examined a number of rails of this description for himself, with the same care he professes to have bestowed upon the patent rail, "he would have saved himself the exposure of his own ignorance, want of candor, and futile attempts" to establish as the exclusive right of this particular rail a character which it has not at present attained, whatever it may do hereafter.

To the question of "Civil Engineer's," in reference to the means by which railway companies are to ascertain the best qualities of rails, I reply precisely in the manner prescribed by "Civil Engineer" himself—i.e., "By a trial of the comparative durability of different descriptions of rails, under the same circumstances;" and by deciding in favour of those which, after every circumstance has been duly considered, are, in reality, the cheapest; and not by concluding that a rail which cost (say) 13s. per ton is the best at stage of the trial, when others that cost, it may be, only 6d. per ton, are, to all appearance, equally good. As "Civil Engineer" may be gratified by being informed of the following facts, I have the pleasure to state, for his especial information, that I am not only "a paid railway official," but also "an advocate of cheap rails," and everything else that is truly cheap; but have no more idea, that anything which bears a low price is cheap, than I have that everything which bears a high one is good; and if "Civil Engineer" had been practically acquainted with the difficulties attendant upon obtaining good rails, and had also been aware that thousands of tons of rails, for which from 10s. to 12s. per ton was paid, are in daily use, of a quality in no way superior to those which have been supplied at half the cost, "he would have saved himself the further exposure of his own ignorance," in believing that, "if railway companies would give a fair price for their rails, they would get a good article." The contrary fact that railway companies have frequently been compelled to pay considerably in advance of "a fair price," without being able to "get a good article," is sufficiently notorious for the most superficial observer to have been acquainted with it. The theory of "a fair price and good rail" being necessarily connected together, is easy enough for an ironmaster to propound, but not so easy of belief, on the part of a railway company.

I beg to assure "Civil Engineer" that I will not only "submit to be taught by him what are the only proper constituents of a good rail," but feel for ever grateful to him for instructing me upon a subject of such importance; and I shall feel the obligation under which I am placed considerably increased if "Civil Engineer" will condescendingly furnish me, at the same time, with the necessary information as to the best or "only proper" mode of putting these "only proper constituents" together, so as to make a heavy rail (what it is not at present made) more durable, in proportion to its weight, than a lighter one, upon the same principle, that a bar of iron, 1 in. square, will wear longer than one of less diameter—i.e., by being, what a heavy bridge rail, such as Sir John Macneill's, is not, a perfectly homogeneous mass of iron, free from those defects of welding, which are the immediate cause of lamination, and from which, the heavier rail, the more liable it is to suffer.

I would not employ the same complimentary language towards "Civil

Engineer" that he has thought proper to indulge in towards myself, and designate him a "wiseacre;" but that he is no *Solon* his own letter furnishes the most incontestible proof, or he would know better than to treat as a discovery of mine, only now pulled off, that which the practice and experience of the last 10 or 12 years of engineers of at least equal eminence with himself has converted into an established fact, for the use of any practical man, possessing intelligence enough to employ it.

May 21.

A PAID RAILWAY OFFICIAL.

## ON THE PURIFICATION OF GAS.

Sir,—Your paper of the 18th inst. contains a letter from Mr. Richard Laming, in which he claims as his right the use of "sulphate of lime" for the purification of gas. Allow me, Sir, here publicly to protest with all the strength of my right against this pretension. I appeal to the distinct wording of her Majesty's patent, granted to me on the 1st of Aug., 1849, in which it is set forth, clearly and precisely, that "sulphate of lime" is the basis of any purifying powder. I use in its manufacture all sulphates of lime, either artificial or natural, without reference to their origin, or from whatever process they may have been obtained. What can be more positive? In my case, I am well determined to defend my rights wherever or whenever attacked, because all the world knows perfectly that, in this land of industry and loyalty, it is well understood how much should be appreciated the sacred rights of those who have known how, by their studies, to enrich science and the public domain. My intention is to address a circular on this subject to all directors, secretaries, engineers, &c., of gas companies.—DE CAVAILLOX, Patentee: Rue Taibout, Paris, May 24.

## CONSTRUCTION OF RAILWAYS OVER STEEP GRADIENTS, AND FOR MINES.

Sir,—Will you permit me, through the medium of your columns, which are so extensively circulated among those who are connected with the mining interest, to make a few remarks, generalising on a suggestion of mine, which I published in a letter to the *Mechanics Magazine* about two years ago? In the letter I allude to I proposed that railways and common roads might be made over country where, according to our present views of road-making, the gradients would be too steep to admit the possibility of drawing any kind of vehicle upon them, by constructing the road in reaches at such a fair rate of inclination as would adapt it for the purposes intended. For instance, in the case of a railway, the maximum rate of inclination might be limited to 1 in 100, and for common roads to 1 in 20, and then raising the carriages from one reach to another, or letting them down as required by vertical lifts, or platforms, which would be moved up or down at pleasure by an hydraulic press. In fact, the road would be constructed in a similar manner to a canal, in which the lifts would be substituted for the locks, with, however, this great superiority, that the reaches would not necessarily be level throughout their entire length, as in canals, but merely at their ends, near the lifts.

Now, I think, as I indeed mentioned in my letter, that this plan might be very advantageously adopted in mines, as lines of way might be laid on different levels, which could be connected with one another, and likewise (by means of a series of reaches and lifts, made in small headings, driven in the earth for the purpose) form a communication with some railway in the neighbourhood, and thus the products of the mines might be placed at once in waggons, or on trucks, in the very depths of the earth, and conveyed direct by rail to the place of their destination. It seems to me that such a system, properly arranged, and introduced into the mining districts, would be productive of great economy of useless expenditure, and would be found much more convenient than the present system. I trust that these ideas may be as useful as I believe they are novel, and venture to present them for the consideration of your numerous readers.

Royal Hibernian Hotel, Dublin, May 20. W. H. VILLIERS SANKEY.

WATERFORD AND KILKENNY RAILWAY.—THE NORE BRIDGE.—Much interest has been excited among scientific men by the opening for traffic of the largest viaduct upon the "lattice" principle yet erected in these kingdoms (noticed in the *Mining Journal* of last and previous week), and intended to carry the Waterford and Kilkenny Railway over the river Nore, near Thomastown, in Ireland. This viaduct has been designed by and erected from the drawings and specifications of Capt. W. Moorsom, C.E., who has constructed seven smaller structures on the same plan during the last 10 years, so that the principle may be said to have stood the test of experience. The viaduct in question is 420 feet in length and 84 feet in height, and consists of massive stone abutments supporting a single arch; or, more strictly speaking, a flat lattice beam of 215 feet in length, with a clear span between the abutments of 200 feet, the lattices being framed in timber and strengthened by cross braces of the same material, and the whole secured with iron fastenings. The depth of each lattice rib is 20 feet, and the width for the railway is 26 feet. On the 30th April last, upon removing the scaffold upon which the arch had been built, the arch sank  $\frac{3}{4}$  inches to its bearings. During the following 10 days numerous trials were made by bringing locomotive engines—sometimes with, and sometimes without trains—over the viaduct, and also allowing the trains to remain at rest upon the arch. The final experiments made by the Government inspector, showed that trains of about 145 tons, made up of two engines, and as many loaded waggons as could stand upon the viaduct from end to end, which were passed over at various speeds, and left for a time to rest on the arch, caused a deflection of 2½ inches, which, upon removal of the trains, rose 1½ inch, subsequent to which trial no perceptible deflection has been experienced. The economy of this description of flat arch is remarkable, the contract made for its erection being at the rate of 15s. per foot, or 3800l. for the whole length of arch; whereas the flat arches of the Britannia Bridge, recently constructed over the Menai Straits, which are 470 feet in length, have cost upwards of 250l. for each foot of their length. The beauty of the viaduct over the splendid valley of the Nore, as seen from Thomastown, as well as the steadiness and solidity of the work, have been the admiration of all who witnessed the trials above noticed, and will, no doubt, prove an attraction to visitors during the approaching summer season.

SAFETY OF RAILWAY TRAVELLING.—Dr. Reid has forwarded the following suggestions for the prevention of railway accidents to the Railway Commissioners:—"1. As to collisions. The momentum the engine, tender, and carriages have acquired is great; but there is no reason, when two opposite trains meet, that they should be all dragged and hurled to destruction; for as the carriage train is connected with the tender and engine, that connection can at once be severed by the coupling acting on a spring, which the guard can in an instant detach, separating in an instant the connection between the engine and the train, so that the latter, the moment the danger is discerned, can then only move with the momentum it has already received; while the drags, and other appliances, will be brought more easily into play, and, in many instances, for we do not conceive it possible in all, the safety of the train will be secured, the engine only being the sufferer. This plan seems to me so simple, that the wonder is that it has not been already suggested and applied.—2. As to the train running off the line along with the engine. Here the same principle, modified in some respects, is to be applied. But, then, how is the guard, especially at night, or in a fog, to discern the false oblique movement? and how are the carriages to be prevented following? The following simple expedient, which consists in making the spring self-acting, will, I respectfully submit, be adequate to the object in view. The connection, or coupling, between the engine and the train of carriages is made in like manner, secured by a spring. The connecting-bar of iron works in a groove, and being an inflexible line, so long as the engine moves straight (that is to say, on the rail), making all due allowance for the curves of the road, both the train and engine hold together. As, however, this inflexible connecting-rod, or bar, is in a line parallel with the force which carries the train, it will deviate at a varying angle from that line, according to the sharpness with which the engine starts from the railway. Carried, then, from the straight line to the oblique, the rod in the groove where it works is made to meet a spring at any angle desired, which, when it is impressed by the extremity of that rod, acts instantaneously, and the carriages at once drop their connection with the engine."—*Railway Times*.

The following curious advertisement appeared in the *Times* a few days since:—"Rescue of Sir John Franklin: to the rich and chivalrous. A gentleman, whose claims to common sense, respectability, and talents, are corroborated by university distinctions, honorary medals, and works of art and literature, offers to construct for 8000l., and in three months, a flying machine, able to travel in the air at the rate of 100 miles per hour. The expense of an experimental model would be 300l., and one month's time."

MONSTER HAILSTONES.—The following extract from a letter is published by the *Bombay Telegraph*:—"I just wrote these few lines to inform you that, on Sunday last, between the hours of 4 and 5 o'clock, a tremendous fall of hail occurred at a village called Condval, about six miles from Sattara. The hailstones are described as being as large as cocoa-nuts. Several houses fell, cattle were slain, and several people were killed by the houses falling in. Many large fish were killed in the river also. The natives declare they have never seen such hail in their lives. I am within the mark when I say they were as large as cocoa-nuts; they have been described as much larger. In camp, we had merely a tremendous dust-storm; but, for several hours, the sides of the hill were white with the hail, like snow in appearance."

The *American Miners' Journal* of the 5th instant says—"Two furnaces have been erected recently in Cornwall, Lebanon County; but they will not be 'blown in,' because it is feared, by some of the loco-focos, it will have a bad effect on public opinion in England."

## FOREIGN INTELLIGENCE.

CALIFORNIA.—Advices from San Francisco to the 1st April have been received.—Three ships arrived on the 7th inst. at New York from Chagres, with one month's later news, the particulars of which are comprised in the following:

AGGREGATE GOLD, SPECIE, AND PASSENGERS.		
Steamers.	Passengers.	Gold and Specie.
Empire City .....	55 .....	\$ 100,000
Georgia .....	140 .....	874,765
Cherokee .....	82 .....	1,861,380
Total .....	277 .....	\$2,836,145

About 200 of the passengers, and \$2,000,000 of the gold dust are from California.

The *New York Herald* comments upon the accounts as follows:—"The news from California is not at all favourable. The steamer does not bring its complement of gold dust to meet the estimate of 25,000,000 per annum; and of the amount of gold reported on board the *California* from San Francisco, all is not dust by a great deal. Prices for real estate, merchandise of all kinds, were rapidly declining, and the revolution had already commenced. We advise those interested in shipments to California to carefully peruse the prices current in San Francisco, and then figure up what the chances are for ever receiving in payment the first cent. after paying expenses. Many of them will not only sink the cost of shipments in this market, but have to pay enormous charges for freight. Failures have commenced in California, and we look for a universal explosion among the speculators of San Francisco. Nothing in the world can prevent one of the greatest revolutions in California ever experienced in any part of the world, and we are so intimately connected with the movements in that country that a collapse there will prove equally disastrous to thousands in this and other Atlantic ports." Included in the failures at San Francisco were Messrs. Frank Ward and Co., who had been reputed amongst the richest people in the city, and a large provision speculator, named Steinberger.

The San Francisco correspondent of the *New York Tribune* writes—"The amount of gold going forward in to-day's steamer is surprisingly large, considering the stagnation that has existed in the trade of the country, and the almost impassable condition of the roads to the mines. On inquiry at the company's office I learn the freight list was \$1,700,000, and it is not improbable to estimate a half a million more among the 230 passengers. Business is already reviving under the genial influence of a spring sun and beautiful weather; and after the departure of the steamer, it is believed the money market will be easier, and a reduction in the heretofore high rates of interest take place. In some instances money has brought 15 per cent. a month for short periods, which is a rate that even California profits will not long sustain. Our correspondence from the various mines is of the most satisfactory character. I am not only satisfied that there will be found no diminution in the average product this season, in the placers worked last season, but that new placers will be opened, more than sufficient in extent to employ vastly greater numbers than will be able to find transport to California the present year. On Saturday I had a peep at the mammoth 23 lbs. lump of gold recently dug up in the Sonorian Camp on the Stanislaus. There is no humbug about it, as yourself and readers will have evidence very shortly, as after a brief period of exhibition in this city, it will be taken, with a greater number of other splendid specimens, to the Atlantic states. So prepare to see something that will make your eyes glisten with admiration. This lump, worth intrinsically about \$4500, was bought by its owners for \$10,000, and much larger sums have been offered for it."

The California newspapers abound in "reported discoveries" of gold—every exploring expedition appearing successful. Large lumps have been found in Trinidad River—certainly somewhat difficult to reach, but then the party succeeded in securing the Indians away, and "staked out lots of 160 acres for each." Great excitement exists in the city of Los Angeles, astonishingly rich gold mines having been discovered in South California. They are in the same range of hills from which flow the tributaries of the Sacramento and San Joaquin. Crowds are going up to the new mines, among whom are gentlemen from the first commercial houses.

One piece of gold weighing 93 lbs. had been found. The *Stockton Times* says—"The wonder of the inhabitants of Stockton was, some weeks ago, much excited by the news that a lump of gold, weighing 93 lbs., had been dug up at Carson's Creek. We, however, heard nothing more about the matter until yesterday, when a gentleman presented us with a piece broken from the mass; as a specimen of the whole, we should judge that it contained barely a 12th part, by weight, of the precious metal, disseminated through quartz. It is much to be regretted that the parties who found the rock have broken it into fragments, as, from the size and beauty of the quartz, it would, if it had remained entire, been of greater value than the intrinsic worth of the gold."

THE SONORIAN LUMP OF GOLD.—The same paper also says—"We have seen the eighth wonder of the world! We have held in our hands the Sonorian lump of gold, weighing 22 lbs. 6 ozs. In January, three Sonorian Mexicans were following their mining pursuits in the arroyo of Sonora, and discovered this 'pile.' The prize afterwards fell into the hands of Linberg and Co., of Sonora, who sold it again for a considerable amount to Messrs. Alonzo Green and Joshua Holding, for a very high premium. To our own knowledge these gentlemen have again been offered \$2000 for it above its intrinsic value. It is estimated that there are about 4 lbs. of common quartz mixed up with the precious metal, as is generally the case in large specimens. We believe it is the intention of Messrs. Green and Holding to send it to the States. We have been informed on good authority that these gentlemen, besides this armful, brought down with them, on their trip from Sonora, not less than 240 lbs. weight of gold dust for exportation."

ANOTHER LUMP OF GOLD!—Major Burney reports that a lump of gold was found in one of the gulches near Fremont's camp, weighing over one hundred ounces (8 lbs. 4 ozs.).

NEW DIGGINGS.—A *grene miner* came rushing into our office (his countenance indicating that he was tickled all over, inside and out) with a quart of sand, which he had "scooped up right out on the American Fork." He said the dirt was full of scales, and, upon examination, it proved to be so, the only trouble being the fact that the scales were those of mica instead of gold! The young man straightened his coat tail, and we think he must be in the vicinity of Trinity River by this time.—*Placer Times*.

The monthly statement of port statistics, taken from the books of the San Francisco harbour master, shows that from Feb. 28 to March 27 inclusive, there have arrived, in 74 American vessels (19,228 tons shipping) 1532 male and 55 female passengers. Foreign vessels, 26 (5814 tonnage), 2208 male and 160 female passengers. Total: vessels, 100; tonnage, 25,042; male passengers, 2028; female passengers, 215.

COAL.—We understand that positive indications (which rarely fail of an actual discovery) of a rich mine of coal have been found not far from San Francisco, which promises an ample supply of that most important material of fuel, both for domestic purposes and those especially of steam navigation. Arrangements are in progress to open the mine, and the result, we have no doubt, will be lucrative to the parties concerned in the undertaking.—*Placer News*.

The *Alta California* says—"We have just conversed with an intelligent gentleman thoroughly acquainted with the mining regions, who has returned recently from a tour through the various settlements known as Spanish Bar, Georgetown, Hangtown (now Placerville), Kelsey's Diggings, Weberville, Auburn, and Greenwood Valley. He found the roads very bad, and travelled on horseback with much difficulty. He gives the most favourable accounts of the situation of affairs in the region spoken of. The population has increased in a surprising manner during the winter, and little settlements have sprung up every three or four miles. The utmost content prevailed among the miners, who were all perfectly satisfied with the result of their winter's labour. The general disposition among them appeared to be to remain in the diggings until the hot weather sets in, and not to come down with their dust until May or June, in order to reap the rich harvest expected at the falling of the waters. This has been the opinion of practical men all along, and applies to all the mining regions. The moment the roads are in good order and communication is rendered easy, the wealth of the mines will pour down and business of all kinds will revive. We have been informed by a gentleman just from the North Fork, that the bars on that stream were found to be very rich by those who have commenced digging. On the Yuba, those who could procure places unoccupied were doing very well, and our advices generally continue favourable."

NEW SOUTH WALES.—Accounts have reached us from Sydney to the end of January. The railway company had at length been organised, and a manager (Mr. Cowper, M.L.C.) appointed on the salary of 6000l. per annum. A call upon the shareholders had been made, which, notwithstanding its novelty, was responded to with great readiness. Mr. Benjamin Boyd, the eminent merchant, had proceeded to California in the Royal Yacht Squadron schooner *Wanderer*; in the Sydney journals a long list of vessels is advertised to sail for the El Dorado, from which it would appear the gold fever had in no degree abated. Such was the abundance of the late harvest that wheat was selling at 2s. 6d. to 3s. per bushel. A seam of coal of greater thickness than has been heretofore worked, has been discovered at Newcastle, where the Australian Agricultural Company were sinking a pit about two miles distant from their wharf at Newcastle, and preparations were in active progress for connecting the pit with the wharf by a railway, the materials for which had arrived in the colony by the *Artemesia*. A further reduction in the price of coal was expected.

Hobart Town journals also announce further coal discoveries.

WESTERN AUSTRALIA.—The Perth and Fremantle journals are to the end of January. The mining prospects of the colony appear to indicate some improved prospect for the settlement, but so many discoveries have turned out mere chimeras, that all intelligence of this nature is received with caution. Something satisfactory, however, is known relative to the Geraldine Silver-lead Mine; a proof of its productiveness, in the form of a ton of lead, had been sent into Perth, a portion of which had been forwarded to South Australia, in the hope of inducing speculators in the sister colony to embark in the undertaking.



Some fine country had been discovered in the neighbourhood of the mine. From the published accounts of the deputy surveyor-general there was an abundance of water, as well as wood for smelting purposes.

**SOUTH AUSTRALIA.**—Advices from Adelaide to the 15th February have been received, by which we find that the City and Port Railway Company were urging on the Legislative Council to pass the Bill without further delay. A gas company has been formed, the shares of which were going off rapidly. A resumption of the quarterly dividends of 200 per cent. on Burra Burra shares was promised on March 31, notwithstanding which circumstance the price of shares had given way. The papers notice the decease of Samuel Stocks, Esq., jun., who, since his arrival in the colony, had filled a leading post in its commercial and mining concerns, and manager of the Burra Burra. The Bank of South Australia appears to have got into some misunderstanding with the middle-class interest, owing to the bank's refusal to cash any cheques under 5L, as also by some doubtful dealings, on the part of Mr. Morphet, a director, who threw out bills for the *Hero's* cargo, because it was likely to forestall that of the *Competitor* in the Mauritius market. Some excitement had been created, and was still rife, about the discovery of gold to some considerable extent, and a company had been formed "for washing and streaming for gold within the colony of South Australia," the sphere of the company's operations extending over 1600 acres of land, with about 20 miles of watercourses already purchased.

The following is an extract from a private letter:—"I have just seen a young man who had lived some time at Burra Burra. He reports (though not a miner) that they had no proper lode there, but that such had been discovered on Princess Royal and Bon Accord—of the latter a very favourable opinion was entertained by the people at Burra Burra; and as he did not know the motive of my inquiries, I was the more satisfied with the information elicited. The Kapunda and Enterprise Mines were thought the most likely to turn out well, next to Princess Royal and Bon Accord."

#### COMPANIES PROCEEDING UNDER THE WINDING-UP ACT.

**PROCESS ON NON-PAYMENT OF CALLS.**—In cases where parties fixed with liability under the Joint-Stock Companies' Winding-up Act neglect to pay the calls made to discharge liabilities, a pre-emptory order is issued by the Master in Chancery, notifying to the persons so refusing to pay their liability to be arrested under a writ of attachment issued by the Court of Chancery, or by the Sergeant-at-Arms attending the Court, and also to be liable to have their estate sequestered for the purpose of compelling payment. The official manager, however, has power, with the consent of the Master, to enter into a compromise in certain cases, and to receive payment of the calls by instalment; but great difficulty is experienced in ascertaining truly the pecuniary position of the parties, to justify this departure from the provisions of the Winding-up Act.

**BANTWEN IRON COMPANY.**—Master Kindersley will proceed, on Wednesday next, to settle the list of contributories of this company; after the list has been settled, no party affected will be allowed to dispute the same without having first obtained leave of the High Court of Chancery.

**GODOLPHIN MINING COMPANY.**—On Thursday, at a meeting for the purpose, Master Sir George Rose made a call of 12L per share on the contributories to this undertaking.

**ANTI-DRY ROT COMPANY.**—Master Dowdeswell has appointed Mr. W. Goodchap to wind up the affairs of this company, which was established with premises at the West India Docks, at Gloucester and other towns, for preserving timber from decay. It is understood that the realisable assets, amount to between 4000L and 5000L.

**KINGSLAND LITERARY INSTITUTION.**—The affairs of this institution are to be wound up, in compliance with a petition from the shareholders.

**PARCELS POST COMPANY.**—Mr. Goodchap has been appointed to investigate and wind-up this company's affairs.

**SHEFFIELD AND RETFORD BANKING COMPANY.**—A call to defray the liabilities has been made on the shareholders to the extent of 11L per share, any surplus balance to be repaid them.

**THE VALE OF NEATH AND SOUTH WALES BREWERY COMPANY.**—Master Brougham has just made a call of 25L on the shareholders, so far as the list has been settled, and excepting as to those whose liability has been settled, with a limited qualification.

Petitions have been presented for the settlement and winding-up of the Oundle Brewery Company, Northamptonshire.

**CHELTEMHAM AND OXFORD.**—Yesterday Master Dowdeswell appointed Mr. W. Goodchap to investigate this company's affairs, the petitioners stating that there are liabilities to be met, and assets in hand that ought to be distributed among the shareholders by seven gentlemen who formed the managing committee, but who have not thought fit to reply to the applications that have been made to them, calling for a statement of receipts and payments.

**PETERBOROUGH, WISBECH, LYNN, AND BOSTON.**—Yesterday Master Senior appointed Mr. Hutton to wind up the affairs of this concern, which was to "command three seaport towns, and link the Atlantic and German Oceans." There were upwards of 100 provisional committeemen, but out of some 20,000 shares allotted, only 960 were actually taken up.

**BRIGHTON, LEWES, AND TUNBRIDGE-WELLS.**—On Wednesday Master Sir W. Horne, having settled the list of allottees, amounting in all to 700, and in whose behalf there is to be an appeal, proceeded with the other class of contributories, who stand in the position of having signed the deed, and who in consequence were fixed as liable.

**DIRECT EXETER, PLYMOUTH, AND DEVONPORT.**—On Monday a meeting of allottees of shares in this company (now being wound up under the provisions of the Joint-Stock Companies' Act) was held at the offices of Messrs. Wright and Bonner, when steps were taken for appealing against the decision of Master Sir W. Horne, who has decided on the liability of 600 allottees, who merely received shares on application. The Master has also fixed as liable between 50 and 60 of the provisional committee, on the ground of their having lent their names and attended meetings in promotion of the scheme. From the evidence given by the secretary and solicitors before the Master, it appears that provisional committeemen were appointed by wholesale in London, Plymouth, and elsewhere; that the engineer required 2000L down before he would proceed, and that it was raised by credit on the Exeter Bank; and, although certain members of the London committee said it would be absurd to make any allotment, 36,400 shares were allotted.

**FALMOUTH AND HELSTON RAILWAY.**—Master Sir George Rose has appointed Mr. Spiller to investigate and wind up this company's affairs, in his capacity of official manager.

**LONDON AND MANCHESTER DIRECT RAILWAY.**—There is understood to be a sum of 21,059L to be accounted for, as in their hands, by the managing committee of this scheme, now being wound up by Master Senior.

**LONDON, NEWBERRY, AND BATH COMPANY.**—Petitions have been presented to the Court of Chancery, in order that this company may be wound up.

**MADRID AND VALENCIA.**—An application is to be made to the Court of Chancery to compel Mr. Chadwick's appearance before the Master on this company's affairs.

**INSURANCE COMPANIES.**—Petitions have been presented for the settlement of the affairs of the Sea Fire and Life Assurance Company, and of the General Commission, Ship, Loan, and Insurance Company. The insurance companies at present in process of being wound up are the London and Westminster Life Assurance, the York and London Assurance, and the Tontine Life Assurance companies.

**YORK AND LONDON ASSURANCE COMPANY.**—On Wednesday, Master Blunt proceeded with the settlement of the list of shareholders in this company, amounting to upwards of 200, and in conducting the affairs of which a called-up capital of some 50,000L has been expended.

**THE TONTINE LIFE ASSURANCE COMPANY.**—On Friday (yesterday) the settlement of the affairs of this undertaking came on before the Master, Sir William Horne. The report of investigation from Mr. Croydall, the official manager, stated that the company was started with a proposed capital of 100,000L, on 5000 shares, of 20L each. It was agreed under the Deed of Settlement that the original directors should retain office for the first five years; that 5 per cent. on all the shares of which the company might consist within 10 years, should be apportioned to its projector, and 15 per cent. thereof to the directors and treasurer, with liberty to any of them to accept or reject the same; and, if the latter to be sold, the purchaser paying all the calls. The premises were in Pall Mall; and, between 1846 and 1849, three secretaries were appointed. To promote the prosperity of the undertaking, and inspire confidence in the public, a people's branch, for granting loans and annuities to the industrious classes, was opened in New Oxford-street; but the experiment involved a loss of 5671L. Many attempts were made, but unsuccessfully, to establish local boards in the country. The deposit of 20s. per share was not fully paid-up; and of the 2000 defaulters, 300 were among the directors. Ultimately, the business was abandoned, and transferred to another company; but no meeting of the subscribers was called to dissolve the undertaking. From the statement of accounts, the total payments appear to have been 9571L; and the total expenses and losses, 7433L. The premises in Pall Mall remain in the company's hands till Christmas. The official manager concludes his report by stating that in all the transactions of the concern there appeared to be nothing but discouragements and failures. Although 12,950 shares were subscribed for or allotted, 7650 were taken by the directors, and 3550 by the projectors, leaving 1790 shares for the public. His Honour, the Master, was about to proceed with the list of shareholders, when objections were raised to the validity of the Deed of Settlement, which, according to the report of the official manager, was not originally stamped, the names of the directors not inserted, the number of subscribers at the date of it not stated, and the clause providing for the election of directors and auditors being left in blank. Upon this ground the meeting was adjourned.

**THE CORK AND PASSAGE RAILWAY.**—This line was examined by Captain Wynne, R.E., inspector of railways, on Thursday, and we understand he has expressed his full approbation of the works. The gallant captain and Sir J. McNeill, assisted by the resident engineer, Mr. Bell, and Mr. Le Fanu, and the contractor, Mr. Moore, tested the stability of the various bridges, particularly that over the Douglas Channel.

**ST. ANDREW'S AND WOODSTOCK (CANADA).**—The tenders were opened on the 14th inst. for the first 26 miles of railway at St. Andrew's, when it was found they were too high, \$12,000 a mile being the terms: they were consequently rejected. A subsequent agreement was, however, made with some of the parties tendering for completing the first 15 miles, which is considered the most difficult and expensive portion of the line. Further negotiations are to be made relative to the remainder of the 26 miles, which, it is expected, will be done at a lower rate. We learn also that a locomotive is expected out this summer from England.—*Quebec Gazette*, May 1.

**THE ELECTRIC TELEGRAPH COMPANY v. BRETT AND LITTLE.**—This case was resumed on Thursday; counsel have been heard on both sides, and the arguments terminated last night; but, as judgment is reserved, we think it better for the present to defer particulars.

**ELECTRIC TELEGRAPH ACROSS THE ATLANTIC.**—The New York papers give full particulars of Mr. John Wilkes's plan for forming a line of electric telegraph between North America and Europe—for carrying out which a company is stated to be forming in that city. He proposes to lay down at the bottom of the sea a wire of solid iron, well insulated, from the eastern coast of Newfoundland to the western coast of Ireland. On the good anchoring ground, which lies 500 miles distant from the first of these countries, he will establish a repeating station, by which the length of the wire will be reduced to 1600 English miles. However deep may be the Atlantic, he proposes to conduct his wire along its bottom. According to all appearances, he says, the depth nowhere exceeds two miles; and he has reason to believe that it is little more than one; but even supposing there may be submarine valleys of 10 or 20 miles in depth, and 50 or 60 in width, he is of opinion that such hollows would present no great obstacle, as the wire might be made to pass over them by means of supports, fixed [we are not told how] at intervals of two miles or less; so that the wire should be kept always 200 fathoms below the surface of the sea. Every 100 miles he would anchor a small raft, with mast and flag, communicating with the wire, that the latter may be taken up when requiring to be repaired or renewed; but his opinion is, that there is no possibility of a wire, laid at such a depth, being injured. To lay down this telegraphic line, two ships, working by a very simple process of machinery, will, he says, suffice. The work will be done in two years, and will cost about \$500,000.

**HENLEY'S MAGNETO-ELECTRIC TELEGRAPH.**—A striking and successful experiment has just been made under the direction of the French Government, to test the efficacy of Mr. Henley's magneto-electric telegraph, which is worked without batteries of any kind, and at a fraction of the cost of the Voltaic system. The line of railway assumed for the trial was that from Paris to Valenciennes. At the Paris end the director-in-chief of telegraphs for the French Government, Mons. Foy, superintended; while at Valenciennes were present the Minister of Public Works, Count Shekendorff, the Prussian ambassador, M. Mosay, the chief engineer of the Belgian railways, Baron Devaux, M. Queleat, and M. Cabray, chief engineer of the Belgian Government; the three latter being members of a commission appointed by the Belgian Government to report on the subject. The distance is 180 miles, being the longest telegraphic line in France. After a most satisfactory series of trials on the single distance, first with the full power, and afterwards with 1-20th of the power, the wires were connected so as to treble the total length of wire, making 540 miles to and from Paris and back—the magnetic message being communicated through the first wire, back by the second, through the third, and back again by the earth. It was not anticipated that the magnet could possibly work through this enormous resistance; but, in fact, it is alleged it is worked as distinctly and rapidly as when only made to traverse the 180 miles with full power. The ordinary telegraph with battery power, used by the French Government was then put in requisition, but not the slightest effect was produced. On the single distance, even, a signal was sometimes not obtained for several minutes, owing, it is said to some fault in the batteries, although the officials were exerting themselves to the utmost. The Government officers and others inspected the working operations from 10 to 3 o'clock, and expressed themselves thoroughly satisfied with the success of the trial.

**SUBMARINE TELEGRAPH BETWEEN DOVER AND CALAIS.**—This submarine communication, which was to have been opened this month, will not now be completed and opened until the end of June.

**TELEGRAPH BETWEEN ENGLAND AND RUSSIA.**—The Emperor of Russia has decided on placing Petersburg in telegraphic communication with Vienna and Berlin, by means of the electric telegraph which will also pass through Warsaw and Posen. The wires are now being laid down between Berlin and St. Petersburg, and St. Petersburg and the Black Sea. When the continuous line of wire, an important part of which is now being sunk submergely between Dover and Calais, is completely in connection with the continent, a person in London may hold almost instant communication with another in Russia.

**STIRLING'S PATENTS FOR IMPROVEMENTS IN IRON.**—1. TOUGHENED CAST-IRON, which is double the strength of ordinary cast-iron, and only from 10s. to 12s. per ton extra.

2. ANTI-LAMINATING RAILS AND TIRES FOR WHEELS at an extra price of about 7s. 6d. per ton. Also IMPROVEMENTS IN THE MAKING OF WROUGHT-IRON—saving one process to the manufacturer.

Further particulars and terms of license, &c., may be obtained on application to Mr. Jee, civil engineer, No. 5, John-street, Adelphi, London; also from the London agents, Messrs. Gardner and MacAndrew, 27, Queen-street, Cheapside; and the Scotch agents, Messrs. W. and J. H. Johnson, 166, Buchanan-street, Glasgow.

**UNSTON IRON WORKS, NEAR SHEFFIELD.**—Messrs. KANGELEY, WRIGHT, and Co. invite the attention of IRON MANUFACTURERS, IRON FOUNDRIES, &c., to their DERBYSHIRE PIG-IRON (smelted entirely with coke), which they can with confidence recommend for all purposes where purity of metal, combined with tenacity or strength, is an object. Their No. 3 pig-iron is sufficiently fluid for all descriptions of foundry-work, and made from this quality will admit of almost any amount of hydraulic pressure. As a mixture with tender iron, or for purposes requiring great strength, their No. 4 is particularly adapted. For FORGE PURPOSES, the loss from waste in cinder, &c., is much below the usual average, and the product a very superior iron.

Messrs. R. W. and Co. also beg to inform RAILWAY CONTRACTORS, ENGINEERS, GAS AND WATER-WORKS COMPANIES, BUILDERS, MILLWRIGHTS, &c., that having purchased an extensive assortment of models and apparatus from Messrs. Wm. Graham and Co., of Milton Iron-works (who have declined business), and having engaged experienced workmen from that establishment, they are in a position to furnish ALL DESCRIPTIONS OF CASTINGS, suitable for the above branches, and at moderate prices.

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#### IMPROVED LIFTING JACKS, IMPROVED RATCHET JACK, HALEY'S PATENT LIFTING JACK.

MANUFACTURED BY W. AND J. GALLOWAY, PATENT RIVET WORKS, MANCHESTER.

\* \* \* The attention of parties who employ

Lifting Jacks,

is respectfully requested to the superiority of those annexed, over those hitherto in use.

BY HER MAJESTY'S ROYAL LETTERS PATENT. IMPORTANT TO RAILWAY COMPANIES, CARRIERS, AND OTHERS.

**ROWLAND BROTHERHOOD'S TILT, for COVERING RAILWAY TRUCKS, WAGGONS, &c.**

This invention allows of trucks or wagons being covered or uncovered with surprising ease and facility, so that one porter can uncover two trucks in the space of a minute, and two can re-cover both in the same time. It allows of a small portion, or the whole area of the truck, being uncovered, and affords great facility for loading and unloading, and protecting the goods in these operations, as well as in the course of transit. It can be secured by locks and keys, thus rendering merchandise secure from plunder. It is cheap in its construction, can be applied to railway trucks and wagons generally, and is easily attached or detached. It runs smoothly through the air at high speeds, and against head winds.

This Tilt has been in use on different parts of the broad gauge during the winter, and has been found to work remarkably well in the severest weather. Experienced and practical persons, who have the management of large goods stations, and have seen these tilts in working, and who know the great wear and tear of cloths, tarpauling, &c., and the inconvenience of existing modes for goods covering, are of opinion that these tilts will be of great utility in railway service. The patentee is himself prepared either to construct or, on moderate terms, to license parties to construct his patent tilts.

Applications to be addressed to R. Brotherhood, Railway-Works, Chippenham, Wilts.

No. 1.

This shows the side elevation of a wagon, with the tilt closed and fastened down.

No. 2.

This shows the tilt as applied to a box